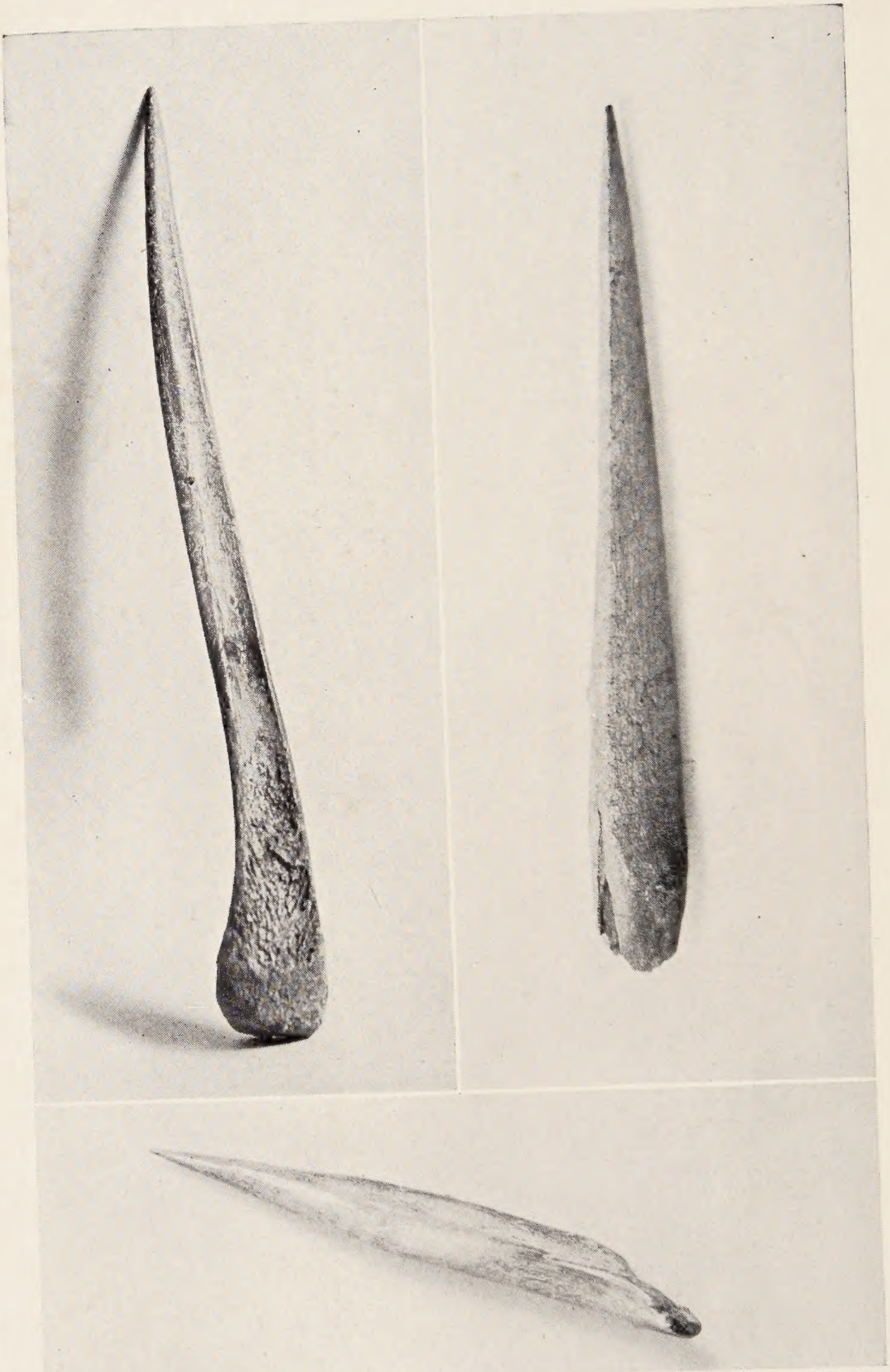
NUNC COGNOSCO EX PARTE

THOMAS J. BATA LIBRARY
TRENT UNIVERSITY

Digitized by the Internet Archive
in 2019 with funding from
Kahle/Austin Foundation

https://archive.org/details/aurignaciansthei0000coll

OP
25^{00}



Upper Left—Bone Point from Mechta el Arbi, Africa. Upper Right—Split Base Bone Point from Abri Cellier—2nd level, Le Moustier, Fr. Lower—Bone Awl *(percoir)* from Lacave, Fr.

THE AURIGNACIANS AND THEIR CULTURE

By

GEORGE L. COLLIE

Curator—Logan Museum

THE LOGAN MUSEUM
BELOIT, COLLEGE
Beloit, Wisconsin

Trent University Library
PETERBOROUGH, ONT.

GN2 .B25 no.1

Copyright, 1928; by
BELOIT COLLEGE

Issued January, 1928
as Beloit College
Bulletin

Vol. XXVI. No. 2

Entered Dec. 16, 1902 as Second Class Mail Matter at the
Post Office, Beloit, Wis., under the act of Congress
July 16, 1894.

PRINTED BY THE DAILY NEWS PUBLISHING COMPANY

INTRODUCTION

Through the generosity of the founders of the Museum, Dr. and Mrs. Frank G. Logan, and the trustees of Beloit College, the Logan Museum has been able to acquire a large and representative collection of the Aurignacian age.

This bulletin has been prepared to aid the students of the college and visitors to the Museum to a better understanding of the Aurignacian people and their culture and thus to stimulate appreciation of the great collection.

The attempt has been made to give a simple understandable account of that age, although it is necessary to use somewhat detailed and uninteresting data in connection with the geological aspects of its history.

Many generalizations appear in the work which will be criticized and opposed by archaeologists. In the present state of our knowledge absolutely accurate statements regarding some features cannot be made. These generalizations are set forth not as the final and ultimate truth but as steps on the road to a better understanding of these interesting and important peoples of the ages past. No pretense is made that they are final in character.

The writer realizes that some of his conclusions may be controverted tomorrow with further discoveries and fuller knowledge, but this is no reason for holding back or failing to advance opinions which seem justified in the present stage of our knowledge.

It is planned through the kind cooperation of Dr. Logan to issue bulletins from time to time, this one being the first of the series. It is hoped by this means to make known in a scientific way some of the important collections in the Museum and also to publish new facts and new interpretations relating to the life of bygone peoples.

In the use of terms the writer has followed the usage of geologists in employing Era for the larger time division and then in succession, period, epoch, age: thus, Era of Stone, Palaeolithic Period, Upper

Palaeolithic Epoch, Aurignacian Age. There is wide diversity of use as regards these divisions but it is time that some unified method should be adopted, and the terms used by geologists are not inappropriate.

Many persons have aided in making this bulletin possible and the gratitude of the writer is given to them all. To Dr. and Mrs. Logan and the Trustees of Beloit College for their gifts which made possible the Logan Museum expedition to France and Algeria. To Governor General Violette of Algeria and to Dr. Albertini, Director of Archaeological Research in Algeria, for many courtesies; to Monsieur Gustav Mercier of Algiers for permission freely given to excavate on his property at Mechta el Arbi; to A. Debruge*, Alonzo W. Pond and Paul H. Nesbitt, research assistants in the Logan Museum, who have not only aided greatly in the excavations but in many other ways in making this bulletin possible. To. D. Peyrony of Les Eyzies, the well known archaeologist of France, for much aid freely and willingly given in securing our site at Le Ruth and in carrying on the excavations. To Miss Helen R. Burnette, secretary of the Logan Museum, for her eager and unstinted aid in the preparation of the manuscript for the printer.

THE AUTHOR.

*Especial thanks are due to Monsieur Debruge for the loan to the Museum of the important Mechta skull which is his personal possession.

TABLE OF CONTENTS

		Page
Introduction		II
List of Illustrations		VI
Preliminary Chapter—The Palaeolithic Period		1
Chapter I.	The Coming of the Aurignacian Man—the First Homo Sapiens	3
Chapter II.	The Glacial Epoch and its Relation to the Aurignacians	7
Chapter III.	The Climate of the Aurignacian Age	14
Chapter IV.	The Fauna of the Aurignacian Age	18
Chapter V.	Men of the Aurignacian Age	23
Chapter VI.	Stone and its Use by Palaeolithic Peoples	36
Chapter VII.	The Utensils of the Aurignacian Age	42
Chapter VIII.	Deposits of the Aurignacian Age and their Attendant Culture	53
Chapter IX.	The Life, Custom, and Manners of the Aurignacians	87
Chapter X.	The Art of the Aurignacians	101
Chapter XI.	Religion of the Aurignacians	115
Chapter XII.	Retrospect	131
Index		135

ILLUSTRATIONS

PAGE

Aurignacian bone work ... *Frontispiece*

Diagram—Divisions of the Palaeolithic Period in Europe and North Africa ... 1

Diagram—Correlation of Ice Age and Cultural Chronology After MacCurdy ... 8

Le Rocher de la Peine (Dordogne) France ... 12

Mural drawing in red of the woolly rhinoceros in the cavern of Font-de-Gaume (Dordogne) France ... 21

Flint implements ... Chap. VII. 42-53

Section of Abri Cellier site at Le Ruth, France ... 63

Lower Level of Middle Aurignacian, detail from Map I Le Ruth site 1927 ... 64

Quantitative Relationship between solid base point and cleft base point in upper half of deposit I ... 65

Relationship existing in lower half of deposit I ... 65

Types and Quality of artifacts found in lower layer of Middle Aurignacian. Le Ruth site ... 66

Types and Quantity of artifacts found in upper layer of Middle Aurignacian ... 67

Frequency Distribution of Tarte Scraper 30′-40′ from east wall ... 68

Frequency Distribution of Tarte Scraper 30′-35′ from east wall ... 69

Frequency Distribution of Simple and Double Grattoirs ... 70

Magdalenian Drawing on Stone ... 110

Aurignacian Necklace ... op. 107

A Mother with her Child—Capsian—Province d'Albacete, Spain (After Breuil) ... 113

Female Figure holding a bison horn. From the Rock Shelter of Laussel, (Dordogne) France ... op. 123

GLOSSARY OF TERMS

BATON DU COMMANDMENT—An implement made of antler with a hole drilled where the horn divides. It may have been a species of sceptre used in ceremonies as an evidence of authority, more likely however they were used for polishing the shafts of spears.

BOVIDAE—A family of ruminants including such animals as cattle, sheep, goats and true antelopes. Members of this family were favorite food animals in Aurignacian times.

BURIN—A tool used for engraving bone, wood, and stone in the Aurignacian. It was usually made of flint.

COUP DE POING—This tool was commonly made from flint cores; it was pear-shaped, one end being left rounded for a hand hold, the other was brought more or less to a point, the sides were brought to an edge. It was the most wide spread and common implement of the Earlier Palaeolithic and occurs in limited numbers in the Aurignacian.

CUPULES—Depressions, generally of small size, worked in slabs of stone. They may be arranged over the surface of the stone in some definite fashion; often they show no order of arrangement. They are commonly found in connection with engraved stones of the Aurignacian Epoch.

EOLITHS—Implements of crudely chipped stone, quite varied in form. It is a matter of dispute whether they are natural or artificial.

ESCARGOTIÈRE—The French term for heaps of snail shells, sometimes several hundred feet long and ten or more feet high, which are found widely spread in the region of North Africa between the Sahara and the Mediterranean. Culture is found in these heaps and also skeletal remains of man and animals. The culture is commonly Aurignacian in character.

ÉCLAT—The French term for a coarse, thick and irregular flint flake struck off from the parent nodule.

LAME—The French word for a long and comparatively narrow, thin flake struck off from a prepared nucleus.

LOESS—A deposit of fine yellowish clay and fine angular sand brought into place by the agency of wind or water. Loess is abundant in some areas of Europe and at times contains many artifacts and skeletal remains.

MACARONI—This term is applied to long, twisted, meaningless lines drawn on the walls of caves in some areas of Europe. They seem to represent early attempts at drawing.

MICROLITHS—Small, generally symmetrical flakes of flint which show fine retouching; they are often geometric in form and are common in deposits of Aurignacian and later epochs.

MIDDENS—A term for shell heaps.

NODULE—A rounded irregular mass of mineral matter, commonly concretionary or partly crystalline. Flint nodules are very common in the chalk and limestone of Europe and they furnished much of the raw material for the flint worker.

OCHRE—A soft yellow, red or brown oxide of iron widely used as coloring matter by Aurignacians.

PATINA—A crust which covers the surface of stone implements. The material forming the crust is brought in solution from the interior of the stone and slowly accumulates on the surface. It may be an evidence of antiquity though not necessarily so.

PHALLIC WORSHIP—Worship of the regenerative power of nature, the phallus being the symbol of this power. This form of worship existed among the Aurignacians as evidenced by certain engraved symbols.

RETOUCH—The chipping or reworking of flint implements; the correcting or improving of a flint by removing chips from it.

SPOKESHAVE—A tool with a concavity or embayment worked in it for the purpose of rounding off wood or bone tools.

STEATOPYGY—Collection of fat upon certain portions of the body, especially the buttocks. This feature is frequently shown in Aurignacian carvings of women.

VENUS FIGURES—Figures carved in stone, bone or ivory, either in the round or in bas-relief, which emphasizes the portions of the female figure which have to do with maternity. These figures are especially a feature of Aurignacian artistic endeavor.

PRELIMINARY CHAPTER

THE PALAEOLITHIC PERIOD

The Aurignacians, who are the subject of our study in this bulletin, lived in the Palaeolithic Period and a brief statement regarding this time should be given at the outset.

The French savants have been foremost in the study of the Palaeolithic and the different ages into which it has been divided by them have been very generally accepted by students of archaeology. The appended table shows these subdivisions, as generally given, both for Europe and North Africa.

EPOCHS	EUROPE	NORTH AFRICA
Upper Palaeolithic ended 35 000	Magdalenian	
	Solutrean	Capsian
	Aurignacian	Aurignacian
Middle Palaeolithic	Mousterian	Mousterian ended 35000
Lower Palaeolithic	Acheulean	Acheulean
	Chellean	Chellean

In late years there has been a tendency on the part of investigators who live in southern Europe not to accept this tabulation in its entirety. Thus, the Italian archaeologist, Battaglia, recognizes the lower and middle epochs of the French, but on account of the absence of Solutrean and Magdalenian south of the Alps, he modifies the Upper Palaeolithic. He feels that the time has come for Italian students to break away from the tutelage of the French and as a result he rejects the term Aurignacian and substitutes that of the Grimaldian, which is made the equivalent of the Upper Palaeolithic.

The African archaeologists, in a similar way, use the term Capsian although some of them recognize the Aurignacian also.

The history of the Upper Palaeolithic in the Mediterranean basin is quite different from that of the Atlantic basin in Europe; of that there can be no question and we do well, doubtless, to emphasize these differences. At the same time the Grimaldian and Capsian culture are closely similar to that of the Aurignacian and they should be called, in the writer's opinion, Aurignacian, as that term has priority. There are not sufficient differences in these cultures to warrant the acceptance of these new terms and in this bulletin such terms are not recognized as valid.

In the Mediterranean basin it appears that the Aurignacian spans the whole of the Upper Palaeolithic, hence, necessarily, it is a much more widely extended age than in Central Europe; that is, it covers much more time. This fact should be appreciated in the study of the North African Aurignacian.

The different ages into which the Palaeolithic is divided are based on the cultures found in the different horizons. No attempt can be made here to describe the differences represented; that fact must be taken for granted. Stone is the foremost material used in all utensils and the flaking process, the chief one used in shaping the stone artifacts all through the period.

CHAPTER ONE.

THE COMING OF AURIGNACIAN MAN—THE FIRST HOMO SAPIENS

During the later stages of the last Glacial Epoch there appeared in the Eastern Hemisphere, a new race of men replacing the Neandertaloids, who had so long occupied the land. These new comers appear suddenly on the field of action; they bear little or no relationship to their predecessors although a few apparently transitional forms are known in Africa. On the whole, this group, Aurignacians, as we may conveniently call them, were superior to the men who had lived before them, both mentally and physically. They and their predecessors had relatively little in common and the almost universal absence of transitional forms indicates not only the lack of physical relationships between the two, but shows the probability of an existing antipathy, one for the other, in what is now Central Europe.

The Neandertal peoples were bestial in appearance; they had squat, ugly bodies, poorly developed foreheads but fairly large though inferior brains.

The Aurignacian man belonged to a different species; he was a true *Homo sapiens,* and thus specifically one with ourselves who live today. He was wholly on a par with us in his mentality and many assert that some of his kind excelled us physically at least, if not mentally.

With him he brings a new type of industry and culture superior to anything that had gone before, this new culture is named Aurignacian,(1) although it is not known that those we call Aurignacians originated it. All that we do know is that they carried it with them in their wide wanderings.

In man's long occupancy of the earth there is perhaps no more significant event than the appearance of these people and their culture. They are the harbingers of a new day; in them are the potentialities of modern life, the roots of our civilization. They were the first modern men; out of the welter of static, unprogressive peoples they come forth with new ideas, new purposes and new methods. With their coming, civilization is assured; yea more, it is on the way.

---

(1) Named from the station of Aurignac in the Department of Haute-Garrone, France, where typical culture of these people occurs.

In considering the story of the Stone Era many would lay greatest stress on the passage from the Old Stone period to the New Stone period; that is, from the Palaeolithic to the Neolithic. In the opinion of other earnest students of the subject the most significant step taken in that age-long time was that from Middle Palaeolithic to the Upper Palaeolithic; from the Neandertal man to Aurignacian man. The writer feels strongly that the appearance of this Aurignacian man, this first *Homo sapiens,* is of moment in the history of mankind, heralding as it does the advent of that group which has become not only the dominant, but the sole species on earth. In other words, civilization begins to make its appearance, not in the Neolithic, but in the Aurignacian age of the Palaeolithic; the latter, witnessing a more significant change in mentality and as striking an impetus in culture as did the Neolithic. The Aurignacian also pushed his culture farther along toward our civilization in his relatively short stay than did all of his predecessors during their age-long life upon the globe.

These new comers are by no means a unit ethnically; they represent various physical types, they cannot be regarded as one race and they doubtless had quite diverse origins. The supposition so widely held that the peoples of the Upper Palaeolithic are all Cro-Magnons is utterly without foundation and indeed there are grave objections to the grouping of such diverse peoples under one common title. Some of them were Cro-Magnons but others of them were not definitely so.

Whence the Aurignacians came no one knows; they may be Asiatic or, what is more likely, they originated in Africa. The most common view is that these first modern peoples, at the outset, came from the plateaus of Eastern or Central Asia. There are reasons for believing in the African origin of *Homo sapiens* and even of man himself and these reasons may be briefly stated as follows: Africa has been the home of the higher anthropoid apes during recent geological time. These primates probably originated in the Fayoum of Egypt, possibly in North America; both views are held. If the latter be true, they migrated to the African continent in Tertiary time where they have since resided and developed. These apes, the chimpanzee and gorilla, are the nearest to man in kinship. If conditions were favorable in Africa for the evolution of this nearest collateral branch to the human family, it would doubtless be equally favorable for man, provided he obtained a foothold there. The very presence of these close relatives hints at the possibility that the common ancestry was there as well.

Again, Africa is the home to this day of some of the lowest living men, such as the Bushmen, the Hottentots and the Pygmies. These lowly groups, perhaps originated there, at least nothing to the contrary has been shown; they are original inhabitants, descendants of early stocks of *Homo sapiens.* They indicate how very lowly and primitive this stock must have been, and how closely allied to yet earlier and less-advanced human beings.

Then too, Africa, although as yet not carefully explored, has yielded remains of early man. A number of these have been found, some of which are Neandertaloid. One of these, the Rhodesian man although puzzling in character, has been interpreted by G. Elliot Smith as definitely more primitive than Neandertaloid men both in facial and skull features, in spite of certain Neandertaloid characters which it possesses. This "Rhodesian species," says Mr. Smith, "is the most primitive member of the genus Homo at present known"; therefore, the most primitive being deserving the title Homo made his home in Africa.(1)

Thus, there are evidences both from living and extinct members of the human family that Africa was the cradle of very early and primitive men and it is our opinion that this evidence is stronger than any so far presented in favor of any other location.

The quite dissimilar physical elements represented in the Aurignacian group and the high degree of their culture, all suggest a long life history, somewhere, in the course of which, they gradually took on these physical and cultural diversities which characterize them as they emerge out of their unknown past into the field of our knowledge. It may be that they are older, as has been hinted, than even the Neandertal species and developed in a different region long before their appearance in Europe where they supplanted the Neandertaloids. This seems on the whole more likely than that they are a relatively modern group, a new and superior variation or mutation

(1) By some the Rhodesian man is regarded as an early Homo sapiens. On this supposition this species may have originated in Africa from which it has spread until it has supplanted and superseded all other species and genera of mankind.

from the older stocks, which was enabled to make rapid headway on the earth by reason of its superior mentality.

The question of origin, in so far as it affects Aurignacian peoples, cannot now be answered, nor will it be answered until much more extended research has been conducted in the field.

CHAPTER TWO.

THE GLACIAL EPOCH AND ITS RELATION TO THE AURIGNACIANS

There can be no understanding of these, or any other people, without a study of their surroundings and backgrounds. Therefore, in order to appreciate the Aurignacian man and his problems, we must, at the outset, glance at the Glacial Epoch, the geological epoch in which he lived, studying its relationships to him and noting its effects upon him and his welfare.

The Glacial Epoch was an exceedingly complicated time, during which there were many changes in the elevation of lands above the sea, in topography, in climate and in the fauna and flora of the Northern Hemisphere. There is little agreement among geologists as to details in the history of this time for many occurrences are obscure and difficult of interpretation.

Some of the more important events, especially in Postglacial time, will be considered, not because of their geological importance but because of their bearing on Palaeolithic man.

During the Pleistocene or Glacial Epoch there were a number of advances and recessions of the continental ice sheets and of the mountain glaciers in the Alps and Pyrenees. There is some difference of opinion as to the number of these oscillations, but in this bulletin the theory of Penck, the Austrian geologist, will be followed. According to this authority there were four major advances of the ice, named in the order of their appearance: the Günz, Mindel, Riss and Würm ice sheets. Between each advance there was a period of recession when the ice retreated, forming an interglacial stage. There are three of these stages named in the order of their occurrence: the Günz-Mindel, the Mindel-Riss and the Riss-Würm. The diagram(1) will show the possible relationship of these various events to each other and to the men of the time.

(1) Adapted after MacCurdy.

Geological Periods	Geological Epochs	Geological Ages	Human Eras	Human Periods	Human Ages	Human Culture
Quaternary			Era of Metals	Iron	La Tene	Late Iron Culture
					Hallstatt	Early Iron Culture
				Bronze Copper		
			Era of Stone	Neolithic	Carnacian Robenhausian Campignian Maglemosian	Dolmens Polished Flints Pottery Domestication
				Transition	Tardenoisian Azilian	Geometric Flints Painted Pebbles
	Holocene	Final Postglacial Retreat Daun Advance Retreat Gschnitz Advance Retreat Bühl Advance Achen Retreat Advance Laufen Retreat		Palaeolithic	Magdalenian	Painting Harpoons Javelins
					Solutrean	Willow Leaf Points Crane Bill Points Laurel Leaf Points
					Aurignacian	Font-Robert Gravette Aurignac Art Châtelperron
	Pleistocene or Glacial Epoch	Würm Glacial Stage Riss-Würm Interglacial Stage Riss Glacial Stage Mindel-Riss Inter-Glacial Stage Mindel Glacial Stage Güuz-Mindel Inter Glacial Stage Günz Glacial Stage			Mousterian	Points, Grattoir, Coup de Poing, etc.
					Acheulean	Coup de Poing and Racloir
					Chellean	Coup de Poing
					Prechellean	Transition
Tertiary	Pliocene			Eolithic	Prechellean	Utilization of Natural and Artificial Flint Tools

After the last (Würm) advance of the ice we enter Postglacial time or the Holocene of some writers. The Aurignacian man enters Europe early in Holocene time, or at the very close of the Pleistocene, meeting with many vicissitudes as there were minor climatic changes going on steadily.

In speaking of the Great Ice Age with its tremendous development of huge ice sheets invading millions of square miles in the Northern Hemisphere, one is apt to emphasize the presence of the glaciers and of the cold and to overlook other features equally significant. One of the most important of these is that there were periods of heavy precipitation, followed by those in which snowfall or rainfall was greatly reduced. Slow swings of climate from one extreme to the other have characterized all geological time, but these oscillations were relatively rapid and emphatic during the Pleistocene. Mankind, during this particular time, was in its infancy and was striving to secure a foothold upon the earth.

Throughout the periods of heavy precipitation the glaciers would increase in size and vigor and a forward movement would result, causing the glaciers to deploy over the country. When precipitation decreased the glaciers, failing to receive the needed alimentation, would decrease in size and a retreat would set in which, if sufficiently prolonged, would result in an interglacial stage.

Accompanying these changes there were others such as alternations in heat and cold, in cloudiness and sunshine, in the severity and direction of the winds, *et cetera,* and these climatic shifts necessarily had a marked effect upon the fauna and flora of that day, and thus directly or indirectly upon man himself.

When the Würm glacier began retreating, the Laufen retreat, and this process had gone on for some time, there was a climatic change which checked the retreat and caused a temporary stand of the ice, after which there was a second retreat, the Achen retreat. Then follows the important Bühl stadium which affected the mountain glaciers of Europe markedly and indicated quite a change in climate. After this there is a retreat, then the Gschnitz advance, then another retreat and then the Daun stadium followed by a final retreat. These alternations are illustrative of the manifold changes which took place in Postglacial climates and in the midst of which Aurignacian man came into Europe.

This man was a hunter who depended quite exclusively on the animal life of the time for food and clothing and anything that affected adversely the game supply spelled *disaster* for him. Times of greater cold or of increased snowfall were less favorable for the animal life than dryer periods with their more congenial climate and decreased precipitation. When it is remembered that many elevations outside the area of continental glaciation were covered with local ice caps, such as the central plateau of France, it is clear that increased snowfall with its attendant ice advance would lessen the areas open to animals. Their feeding grounds were reduced, resulting in their migration or starvation.

Thus, man had fewer animals for his needs and also a more restricted range over which he could hunt. This is an illustration of how the Aurignacian's food-supply and his general comfort were at the mercy of climatic conditions. It seems probable that the Aurignacians arrived in Europe during the Achen retreat, a relatively dry time, which encouraged the coming of the steppe fauna to which they seemed best adjusted and which they most persistently followed.

Another notable feature of the Pleistocene was connected with its influence upon animal life and migration, as just noted, but which needs further discussion. The great age of mammals had passed with the Pliocene Epoch, just preceding the Pleistocene, and during the latter, mammals were in their decline, the glacial climate having an adverse effect upon them as a whole. Yet, in spite of all that, game-animals were very far from being extinct and there were still great herds of them in favorable localities. Probably no group of men in all human history ever saw a greater variety or even a greater abundance of the larger mammals than did the Aurignacians as they came on over the plains of France and pushed on into Central Europe in early Postglacial times.

The reason for this exceptional abundance, especially in France, lay in the fact that this region was almost entirely unglaciated and the continental glaciers had driven the northern types of animals southward where they gathered in large numbers. Even after the glaciers began retreating, though many of the animals migrated northward in the wake of the vanishing ice, yet they did so slowly, and many, becoming adjusted to conditions somewhat, remained behind. From the Alps, Pyrenees, Vosges, Caucasus, Carpathians and other ranges the mountain-loving forms were driven down upon the plains during stages of ice advance where they lingered even though circumstances changed. With a moister and cooler climate tundra-animals prevailed, while in dryer periods the steppe-animals were favored.

Because the Ice Age had many kinds of climate there resulted a great co-mingling of different types of animals suited to some one or another of these changes and some often remained behind when their own type of climate was passing. The lowlands of Southern Europe and notably of France contained a great and varied assemblage of different animals such as man, at least, had never known.

The Ice Age rendered a great service to all the men of the Palaeolithic in another direction for it was through its agency that their chief habitations were prepared for them, namely the rock shelters and the caves. There is no very definite evidence that they constructed artificial shelters of any kind although in some cases, as at Solutré and in the Somme Valley, they lived in open encampments. Certainly their principal homes were in the natural shelters afforded by the rocks. The explanation of these habitations being, in brief, as follows:

Toward the close of the Tertiary period and just prior to the Pleistocene there had been important uplifts of the land in the Northern Hemisphere which greatly quickened river action and caused the rapid erosion and deepening of many valleys. This erosion was aided notably by the increased volumes of the streams caused by the heavy precipitation which existed prior to the formation of the first ice sheet. By reason of their heightened powers the rivers deepened their valleys to the extent of several hundred feet in many areas, as in the Dordogne of Southwestern France. During such periods these newly cut valleys were occupied by madly rushing torrents which extended from one valley wall to the other. In limestone regions these swirling rivers performed a great deal of lateral erosion, under-cutting and dissolving out the softer and more soluble strata. This action resulted in the formation of great open galleries along the river cliffs and especially at their base or very near it. This action left recesses with overhanging rock roofs and underlying rock floors. It was in this way that the numerous abri were formed which were so extensively used for homes by the Aurignacians and other Palaeolithic peoples. They furnished greatly needed shelter, especially those with warm, southerly exposure. These rock shelters are very abundant in the Dordogne district of France and their presence furnishes one reason why Aurignacians were so numerous in this particular region.

In a similar way the tributaries of the main streams increased their action; they often became underground streams in limestone areas because they found their way down through the large fissures which abound and then by erosion and solution gradually worked out the long and often roomy caverns which occur so abundantly in the limestone belts of Central Europe from Spain to Moravia. These caves not only served the Aurignacians and their successors as houses, but they became the centers for their social, religious and artistic

Le rocher de la Peine. (Dessin original de A. Pujol)
A Rock Shelter

life, where they carried on their mystic rites and where they depicted their interesting artistic ideas.

When the ice began melting, the rivers, big and little, flowing from the glaciers carried away great quantities of sediment which they finally deposited in the lower portions of their valleys, filling them more or less with sand, gravel and clay. When the melting stopped as the climate changed, the rivers were freed of much sediment and were enabled to remove a part of these deposits and to cut new valleys in them. In this way terraces were often left on one or both sides of the valley and often a series of them, one above the other. These terraces had importance in the life of early peoples if for nothing else than feeding grounds for game-animals.

In some instances during the Glacial Epoch a fine, yellow, calcareous clay, known as *loess,* was carried by streams, or more especially by winds and deposited over the sites which had been occupied by the Aurignacians, helping to cover up and preserve the old stations where these men lived and worked. Many important remains of early man have been found in such loess deposits; this is quite true of Aurignacian remains in Moravia, described by Absolon and others.

The glaciers also left a varied topography of moraines, ridges, plains, marshes and lakes, all of which had their effect on man, determining the course of his migrations and the movements of animals and, to an extent, their feeding grounds and their habits of life.

Again, this Glacial Epoch was a time of relative crustal instability. In the Northern Hemisphere there were uplifts and depressions of the land, sometimes of great extent, and simultaneously some regions were being elevated while others were sinking. In some cases the same region alternately was lifted and lowered. Along the shores of the ocean when land was raised, the sea retreated, but as it was depressed the sea readvanced over the land surface drowning out the lower portions and driving men from their ancient homes along the coast.

All of these changes and vicissitudes help us to understand and explain the constant migrations of men and animals in the Glacial Epoch. All animal life was on the move, coming and going, appearing in this area for a space of time, then disappearing only to reappear elsewhere. There were frequent displacements of faunas and continual migrations. The instability of conditions explains the repeated hiatuses that one finds in Palaeolithic deposits. One layer will contain an abundance of artifacts, indicating human occupancy for a period; in turn this layer is likely to be followed by another, perhaps thick deposit, utterly sterile with no sign of human inhabitancy. Evidently the earlier peoples had been ousted from the region by some one or more of these constant changes which the Pleistocene afforded; they go for the time being, only perhaps to return at a later time or perhaps to disappear altogether. Like the animals, man too, was ever on the move in that period.

CHAPTER THREE.

THE CLIMATE OF THE AURIGNACIAN AGE

In connection with the account of the Ice Age, a summary account of the climate in Aurignacian time should be given, although it has already been touched upon in the previous pages.

Throughout the Aurignacian age the climate was prevailingly cool and dry, denoted by the contemporary animal life. As already indicated it seems necessary to connect the coming of the Aurignacian with the retreat of the Würm Glacier, perhaps at the stage of the Achen retreat. This would be the time of maximum dryness which seems to be demanded by evidence of the prevailing fauna. As the horse, saiga antelope and other steppe types drifted into Europe or migrated from place to place, the Aurignacian man would follow them.

MacCurdy(1) has correlated some of the different views of geologists regarding the succession of events in the Pleistocene and according to one possible correlation the Achen retreat occurs at about the same time as the Lower Forestian. This was a time, according to the Scotch geologist Geikie, of extensive uplift, which united Great Britain to Ireland and to the continent and which, we may add, possibly affected the Mediterranean basin, producing land bridges at Gibraltar or connecting Africa with Europe through Sicily and Malta. As there is evidence of the presence of negroids and of African culture in Europe during the earlier Aurignacian age, it would seem plausible to assume that the migrations took place during this uplift, correlated with the Achen retreat—that time of relative desiccation.

Apparently, Africa was the ancestral home of some of the Aurignacian peoples and probably of Aurignacian culture. Here the people had become adapted to a dry climate and as they moved over into Europe they found similar climatic conditions which would attract and hold them. The post-Pleistocene horse, probably the favorite food of the Aurignacian, was very similar to, if not identical with, the steppe-horse now living in the Gobi region. This would lead to the inference that Europe had the cold, dry climate we ordinarily associate with steppes and which would prove acceptable to these incoming Africans.

---

(1) Human Origins—George Grant MacCurdy, p. 60.
Appleton & Co., New York.

With the Bühl advance there must have been an increase in snowfall or rain. These moister conditions would tend to bring in a different type of animal life, one accustomed to greater humidity. Tundra types, such as the reindeer and musk ox, already denizens of Central Europe, would advance in even greater numbers to the southward because the changing climate favored them. This possible climatic change and the approach of a different fauna may be one explanation of the final withdrawal of the Aurignacians just before the fullness of the Bühl advance.

In so far as Aurignacian time is concerned, the middle portions of that age were to all appearances the most favorable for man. The climate had ameliorated to some extent and animal life was more abundant, conditions which favored a freer life, less repressed and hampered. The increased food and the greater ease of obtaining it encouraged leisure for other things than mere living and as a result there was great improvement in the technique of the flint workers, and in the general culture; artistic endeavor made great advances.

Later on, climatic conditions became more severe and the Magdalenians who inhabited Europe at this later time, lived in a much colder climate than did the Aurignacians. It was much more difficult to secure game, for favorite animals, such as the bison and reindeer, were fast disappearing.

The lot of the Aurignacians was quite the happiest of the Upper Palaeolithic Epoch both from climatic and food standpoints. In some cases the improved conditions permitted an open air life quite in contrast to the cramped hard life of his Mousterian predecessors. In Northern France and in other portions of Central Europe stations are found on the banks of streams quite apart from the natural rock shelters. In Moravia, utensils and remains of mammoth feasts are located in open valleys where, if man had shelter of any kind, it must have been artificial. The same is true in North Africa where Aurignacian remains are abundant in shell heaps out on the open plateau.

On the other hand, in Southern France and quite generally in Central Europe, man preferred to live in rock shelters at this time, either because the climate was still of sufficient severity to make them attractive or because the very abundance of these natural shelters led him to make use of them as more economical than the erection and repair of artificial houses could possibly be.

The problem of the climate in its relation to the Aurignacian man is one not alone for Central Europe, but for the whole Mediterranean basin, in all parts of which he apparently lived. The vast territory bordering the whole of that sea, and more especially that of North Africa, is involved in the question of climate. The general statements already made concerning the climate of the Aurignacian period in Europe apply to that found in Egypt and Algeria, except that the African climate was milder and less subject to extremes of heat and cold. This climate did, however, have the alternate periods of moisture and desiccation even to a greater degree, perhaps, than that known in Europe at the same time.

It will be remembered that Africa is for the most part a great plateau, a region of high average elevation, and North Africa is no exception to this condition. As one goes away from the sea coast and penetrates the uplands ever greater extremes in temperature are experienced; the nights are cold, due to rapid radiation, while the days may be very hot and oppressive with rapid evaporation of whatever moisture there may be. Hot drying winds, such as the sirocco are felt; these winds originate in the Sahara and last from a few hours to several days. The winds that bring rains are from westerly directions, chiefly from the northwest. Rains fall in the winter and tend to be of a torrential character, causing violent floods and excessive erosion; they do not, however, furnish the soil with ground water reserves. The summers lack rainfall and are usually very dry and hot. Apparently, the conditions now prevailing have existed in a general way since Palaeolithic days.

According to Gsell(1), who has written the best general account of North Africa in ancient times, the climate was warmer and somewhat more humid in prehistoric times than it is now. This is indicated by the remains of several animals found with flint utensils. The presence of such animals as the Atlantic elephant, the rhinoceros and hippopotamus indicate moisture and warmer conditions than now exists in North Africa. According to the same authority, the Sahara, while dryer than the coastal region, was by no means the desert it is now. This is indicated by the marked identity between several species of animals that then lived in North Africa and which still exist in the Soudan, south of the Sahara. These animals are such that they could not cross the desert under present conditions, but must have passed back and forth when there was more rainfall and better means of subsistence than now exists in that area.

While the cold, moist climate of the Würm glaciation held Europe in its grasp, North Africa was enjoying a less extreme climate, one more favorable to the ongoing of mankind. Glaciation in Africa

(1) Histoire Ancienne de l'Afrique du Nord, Tome 1, pp. 51-52. S. Gsell, Libraire Hachett, Paris, 1921.

was nowhere great, not even in the higher ranges of the Atlas mountains. Although increased cold was felt there during stages of ice advance in Europe, yet its effects were not severe beyond causing the diminution or disappearance of warm-climate-animals, such as the elephant. They would not and did not affect man in a serious way, the main changes being from more moist to less moist conditions.

Often in the Palaeolithic deposits of North Africa an abundance of ostrich egg shells are found; this indicates a time of desiccation, for the ostrich requires a very dry climate.(1) At other times there is great abundance of land snail shells which indicates more rain fall as these gastropods require a certain degree of moisture.

Looking at this question from another point of view, it is known that Palaeolithic stations are fairly abundant in the driest portions of the Northern Sahara. While these stations are not as numerous as in the later Neolithic, they are sufficiently abundant to suggest quite a population where, at present, living would be well-nigh impossible. Judging from the great quantity of debris on some of these sites, the stations must have been occupied for long periods, either intermittently or permanently and by goodly numbers.

The use by Aurignacians of great numbers of snails for food in lieu of other types of nutrition indicates that game animals were relatively scarce; although their remains are found in the shell heaps, yet they are never very abundant. Very often, probably there was not enough rainfall to furnish an abundance of pasturage for animals and yet there was suffcient for the needs of gastropods. It is drier now than it was in the Aurignacian period for, at present, it is too dry to permit land snails to exist in sufficient numbers to furnish a reliable food-supply.

On the whole it appears that North Africa was more favorable climatically, although not faunally, for Aurignacian man than Europe. In both continents there were climatic extremes which caused changes in the animal life, putting man himself under stress which forced him to new adjustments or to ever new migrations.

---

(1) At least this is true of living forms; it might not apply, however to extinct species.

CHAPTER FOUR.

THE FAUNA OF THE AURIGNACIAN AGE

While repeated statements have been made already regarding the animal life in the days of the Aurignacian, yet it seems wise to give a brief summary of our knowledge of the fauna in early Postglacial times with as little repetition as possible.

During the Upper Palaeolithic there were several different types of animals whose grouping depended on climate conditions. These groups were first, The Warm Fauna; secondly, The Cold Fauna, which includes two sub-groups, the steppe fauna and the tundra fauna; and thirdly, the Generalized fauna which seemed to be more or less indifferent to climatic changes and remained in its place through all of the varying weather conditions.

Under the head of Warm Fauna there is included such forms as the cave lion, the striped hyena, the ancient elephant (*Elephas antiquus*), the southern elephant (*Elephas meridionalis*), Merck's rhinoceros and the hippopotamus. The Warm Fauna, very largely interglacial, died out or else migrated as the Würm glacier came on and hence was not largely represented in the Aurignacian age of Europe.

The Cold Fauna of the steppe type would comprise animals fitted for a rather cold, dry climate, such as the horse, the musk ox, the saiga antelope, the chamois and ibex, the snowy rabbit, the wolverine, marmot and lemming.

The Cold Fauna of the tundra grades into the steppe forms and it is not always possible to make sharp distinctions. It included animals such as the mammoth, wooly rhinoceros, cave bear, cave hyena, reindeer and giant stag.

The Generalized Fauna, which seems to remain through all changes, were animals of the cattle and bison types, wolves, foxes and lesser animals.

Considering all of these different groups of animals together it is found that some of them, the mammoth, cave lion, cave bear and giant stag, have become extinct since the Aurignacian age. Those still living, the reindeer, the musk ox and the saiga antelope, have migrated to find more congenial climatic conditions than Central

Europe now offers; yet others, the bison of Lithuania, the ibex and chamois, although greatly reduced in numbers, still remain in the country.

For the most part, the Cold Faunas arrived in Central and Southern Europe late in the Pleistocene. It was not until the Riss-Würm Interglacial age was approaching its close and the Würm ice sheet was coming on, that the Cold Faunas appear in abundance in Southern Europe. This fact has been cited as an evidence that the climate of the earlier Pleistocene was not as severe as has been supposed and that it was only toward its close and for sometime after that the climate became so frigid that forms like the reindeer were forced to migrate into Southern France. When the Cold Faunas finally arrived they remained for a long period and were abundant during the Aurignacian age.

It seems probable that it was with the first coming of the Cold Fauna that the Mousterians arrived in numbers in Central Europe, their culture centering quite largely around the cave bear. When the Aurignacian man arrived and displaced the Mousterian this fauna was prominent, the cave bear staying on into the late Magdalenian before it finally became extinct.

We have noted how the Aurignacian man was favored by an abundance of animal life; he lived and moved in a veritable zoological garden and he knew something of the pristine glory of the mammalian world. It could not be otherwise than that this assemblage of varied animals added zest and interest to a life which had to be lived in somewhat unfavorable conditions, in regions sometimes snow covered, sometimes darkened with dull, leaden, mist-covered skies or swept by dust-laden gales.

The Aurignacians knew the mammoth, one of the smaller of the elephant family, a quaint looking but useful and abundant animal, clothed with a long woolly coat and carrying huge curved tusks. The mammoth is sometimes depicted by Aurignacian artists and it must have had an important place in their economy. There is abundant evidence that the tusks and bones were used for weapons, tools and ornaments, while its flesh furnished an abounding source of food. The middens of mammoth bones in Moravia are one of the most impressive sights yet revealed from the Palaeolithic world. The quantity of mammoth remains, bones, tusks, and teeth, in the loess of that country, especially at Predmost, is almost beyond belief, numbering thousands upon thousands.

An inseparable companion of the mammoth was the woolly rhinoceros with horns which have been known to reach the length of a meter. The fine drawing in red of this animal, by an Upper Palaeolithic artist, is the masterpiece of the Font-de-Gaume cave.

The cave bear, greatest and most redoubtable of his family, and the powerful cave lion, a huge beast exceeding in height any living member of the cat family, competed with mankind for a place in the caverns. The latter was, in many respects, the most dangerous and most dreaded enemy that the Aurignacians had. The preying hyena dogged the footsteps of these people, robbing him of his game and skulking about his fire-hearths and habitations.

The bison, with his humped back, abundant at this time, was not only used for food but was also a favorite object for artistic reproduction, especially among the Magdalenians. Judging from the quantity of bones found in the abri deposits, the great ox (*Bos primigenius*) larger than any living member of the cattle family, likewise, was a familiar figure to the Aurignacian hunter who greatly prized its flesh. This animal lingered on in Europe until the Middle Ages when it finally became extinct.

The reindeer was another characteristic object of the hunting grounds. Although more typical of the late Upper Palaeolithic than of the earlier, great quantities of its remains are recovered in some of the Aurignacian deposits. This animal is so characteristic of the Upper Palaeolithic that it has been termed the Reindeer Age (*L'Age du Renne*). This terminology, originating with the French archaeologist, Lartet, applies well to Central Europe, but it is not an appropriate term in all areas. The reindeer is not found at all in North Africa, or Egypt, neither did it cross the Alps or Pyrenees. Therefore, it does not seem wise to name an age after an animal which, though abundant and very useful, had a relatively limited distribution.

The musk ox and other members of the *Bos* family not mentioned, abounded. The deer family was represented by the giant stag whose antlers reached a spread of ten feet; smaller forms such as the common red deer were abundant. The saiga antelope was common in the Aurignacian age as was the chamois and ibex, now relegated to mountainous districts.

The horse, especially associated with the Aurignacian peoples, was not a large type, but it had a good sized head and was closely similar to the Asiatic form, Przewalski's horse. In some instances it was the chief source of food and the centre of Aurignacian culture.

There were also many small animals, especially rodents such as marmots, lemmings, gophers, rabbits, beavers and many others.

Bird remains, chiefly Arctic and northern forms, such as partridges, snowy owls, ptarmigans, heath cocks, etc.(1), are often found, especially in the Dordogne region.

In Africa, according to Gsell, the Palaeolithic fauna, while containing a number of types also found in Europe, comprises numerous African forms not found north of the Mediterranean. The elephant, rhinocerus, hippopotamus, lion, hyena, bear, wild boar, deer and ox are closely related to European forms, if not identical with them. On the other hand, the zebra, giraffe, gazelle, the gnu and a number

(1) A much more complete account of Palaeolithic animal life may be found in Déchelette's Manuel d'Archeologie, Tome 1. pp. 48-57.

of other distinctly African antelopes and the ostrich are all forms found in post-Pleistocene deposits which are peculiarly African.

For the ancients, Africa was the classical region of ferocious beasts. In pre-Roman times there was such an abundance of lions and leopards in North Africa that human life was very insecure both for the indigenous population and for travelers as well. This sort of thing doubtless prevailed still earlier in Africa and as in Europe, the Aurignacians were harried by the larger cats and it required all of their skill and acumen to preserve life.

In pre-Roman days the inhabitants of North Africa were wont to watch lions stalking their prey and when they saw one kill his victim they would rush forth in numbers, drive the lion away and secure the prey for their own meal without the use of weapons or traps.(1)

Mural drawing in red of the Woolly Rhinoceros in the cavern of Font de Gaume, Dordogne, France

The ostrich played a large part in the life of early man in Africa; both its flesh and its eggs served him for food and the broken fragments of the egg shells were shaped into beads and often engraved. Cups were made from the half shell and used as receptacles for water and possibly for cooking for the shells are frequently calcined. This usage may have been post-Palaeolithic, however.

Other bird life in Africa more closely resembled European forms than did the mammals ,as naturally would be expected.(2)

Reptiles, many of which were exceedingly poisonous, were numerous, especially in North Africa. We know little about the attitude of Aurignacians toward reptiles but we may easily infer their feeling of fear and aversion toward them. On account of the cold climate snakes were probably not a serious factor in the life of European Aurignacians.

(1) The writer had personal cognizance of a similar procedure in East Africa in 1910. A Safari of negro porters and one white man were crossing the Athi plains when the porters saw a lion pursuing a wild boar a short distance away. The lion finally overtook the animal and killed it, whereupon the porters threw off their loads, rushed en masse upon the lion which skulked away. The carcass of the boar was secured and devoured at the evening meal.

(2) For a full and interesting account of the fauna and flora of North Africa in antiquity consult Histoire Ancienne de Afrique du Nord. Gsell, Tome 1, pp. 100-158.

Comparatively little is known of the flora of Europe in the Upper Palaeolithic but it may be assumed that since there were varied forms of herbivorous animals, there must have been several types of vegetation to meet their needs. The herds of bison, cattle and horses would demand grass; the troops of reindeer would require marshy pastures of Sphagnum moss; the numerous deer and allied browsing animals would need underbrush and the protection of forests, at least of stunted growth. Even predatory animals needed cover of some kind in order to stalk their prey successfully.

It would appear that even in the cold, dry Aurignacian time the flora must have been abundant and fitted for the needs of many animals dependent upon it.

Hunting tribes pay relatively little attention to vegetation as a rule and the Aurignacian man was no exception for his artists rarely portray it. Yet, they doubtless used the floral life abundantly both for food and in industry; they certainly recognized its value for fuel purposes. In this connection it is interesting to note that, according to Max Schmidt, "Only the treeless steppes supply food plants in any quantity. There nature seeks to store up food materials in the perennial parts of plants, roots, bulbs or tubers, in order to rescue the plants themselves from destruction.

"Thus, so far as the possibility of obtaining vegetable food is concerned, if man were dependent for food on wild plants, the steppe would be the most suitable for human life in spite of its other disadvantages." It may be that Aurignacian man, being a steppe dweller, utilized its rather liberal provision of vegetable food to a greater degree than has been supposed. If he did so the *abris* give no hint of it.

During the Aurignacian age the conditions in Central Europe were probably not unlike those prevailing in the interior of Northern Canada—"Open plains alternating in favorable localities with forests of conifers, the latter growing on uplands and hills of the more rugged sections; marshes occurring here and there with stretches of tangled growths of underbrush, while prairies of luxuriant grass are scattered about on every hand."

It was in some such a background, climatic, faunal and floral, that Aurignacian man lived. Long, bleak winters, warm and fairly genial summers were his lot. Over the plains and through the forests, in upland and lowland he pursued the animals that furnished him food, suffering oft from the adversities of the climate and yet truly content with the gifts that nature furnished him.

CHAPTER FIVE.

MEN OF THE AURIGNACIAN AGE

Before entering upon a discussion of the physical characters of those who lived during the Aurignacian age so far as we know them, it is well to speak of the relations of geology to these people and the significance of the strata in which their remains are found.

Such evidence as can be secured of these early peoples is found in the debris of caves or abri, much of it having fallen from the walls or roofs of these structures. Some of it has gathered in other ways; some left by these early men themselves in the form of ashes, cinders, bone deposits, and the like. Commonly these deposits are stratified and it is of extreme importance to note from which stratum each recovered relic comes, for it is desirable to date the human remains that may occur in these beds.

Any skeleton or human implement can be sufficiently dated when it is found in an undisturbed bed whose geological age is known. The age may be determined by its geological characteristics or by its relative position with reference to other known beds, or by its fossil contents, both fauna and flora. If there are a series of such beds one above the other, it follows that the remains in the lower bed are the older; relative ages can be determined on this basis.

Palaeontologists also have determined the geological age of numerous extinct animals and plants and when these fossils are found in connection with human skeletons they are of great assistance in dating the latter.

The safest and most trustworthy method of determining the age of any skeleton of ancient time is by means of the accompanying fossils, provided the bed is undisturbed. In default of such an occurrence skeletons and implements may be dated with reasonable accuracy by learning their association with a known type of bone or flint utensil, that is, if sufficiently distinctive kinds are present. A worked piece of flint or a fragment of pottery is often as good evidence of man's existence and of the period in which he existed as the remains of an extinct animal. However it is dangerous to base chronology on utensils alone without other corraborating evidence. This results from the fact that the evolution of human industry and its different stages are not well understood as yet and also because certain types of implements occur repeatedly in human history. Hence it is impossible to determine horizons through their testimony alone. For example, modern primitives like the Bushmen make *coups de poing* not unlike those of the Chellean age; many scrapers of the Great Plains Indians, made in the last century, closely resemble those of the Upper Palaeolithic. It is essential not to fall into the error of trying to date human epochs by the shape of an implement or by the character of the work done upon it. In the pre-Saharan region there are stations where the shifting sands have uncovered innumerable stone utensils so that the surface of the earth is strewn with them over a large area. The temptation to date these flints by their particular shape or the way in which they are retouched is almost irresistible. To yield to this temptation is, however, to fall into almost certain error unless there are other circumstances present which enable one to check his observations.

If animal remains and human utensils are both wanting in the layers and only human bones are found, then the sole method left is to compare the skeleton or its parts with skeletal remains of known date and determine whether there are resemblances or not. This method requires the utmost caution and should be undertaken only by those of great experience and thorough training.

Skeletal remains in the earlier portions of the Palaeolithic are relatively very few, but as we come up into later time, the number of remains multiply. The time is more recent and there is, therefore, more likelihood of preservation, and then, too, later peoples were more thoughtful and careful in regard to burial than earlier races.

The dead were commonly placed in dry caves or abri, sometimes surrounded by slabs of rock or placed in red ochre, methods which made for better preservation than the chance ways utilized by earlier men.

When numerous remains are found the method of comparison is more feasible and safer than when only a few fragments or poorly preserved skeletons occur.

By careful use of the geological methods cited above it is possible to determine the succession of human types as they have appeared on the earth and to know the particular age in which each lived.

The purposes of this bulletin do not call for a consideration of the earliest men of earth but a brief account of the immediate predecessors and successors of the Aurignacians will be given, in order to bring out any possible relationships, cultural or otherwise, that these peoples might have had one with the other.

The immediate forerunner of the Aurignacians was the Mousterian man *(Homo neanderthalensis).* This Mousterian man was an inferior creature in most respects. He had a long and flattened (platycephalic) skull, and in comparison to the size of the skull, the face was large, surpassing that of any modern man. The eye orbits are enormous, the nose short but large and separated from the forehead by a deep depression. The jaws were large and projecting, the chin retreating, in fact, it was almost wanting, giving a muzzle-like appearance to the face (prognathic face). The jaws had large insertions for muscles which indicated great development of the jaw muscles. The teeth were large and were evidently used fully as much for crushing the food as for cutting it, thus indicating that roots and other forms of vegetable foods had a place in their dietary.

It is of interest to note that tooth decay has not been observed in this group but that there was a disease similar to pyorrhea.

The trunk of the body was massive, short and thick set, the thorax very large, and the intercostal muscles powerful. The hand, although large, had short fingers; the legs were short and bent, the man walking in a crouching fashion, stepping on the outer border of the foot, somewhat after the ape fashion and, like that animal, the great toe was prehensile. He was short of stature, averaging about 5 feet, 1 inch in height, but stature varies in his race somewhat.

In some cases the cranial capacity is on a par with that of modern man, but the brain was simpler and less convoluted and the size of the frontal region is less, the huge supraorbital ridges occupying much space.

The Mousterian man and his culture extend across the Middle Palaeolithic, the time of maximum extension of the last glacier, a time of cold and snowfall, of mist clouds and fog, all resulting from the near neighborhood of the glaciers. These ice fields hemmed him in and limited the field of his activities.

As the Pleistocene came to its end, the ice and snow fields began to melt and the tributary streams were flooded, serving to drive these people from their favorite rock shelters along the valley cliffs. According to Peyrony, the Vézère Valley of southwestern France, a chosen haunt of the Mousterians, was filled by the floods to a level 58 feet above the present stream. These floods came toward the close of the Mousterian régime and it would seem that they had their effect in putting an end to it, by destroying the men of that time, or at least forcing them to seek other areas more favorable to them.

At this same time portions of the continent adjoining the sea were being depressed, the ocean was backing up into the valleys and covering the lowlands. This wide-spread flooding by the sea was especially disastrous to the Mousterian for it deprived him of his hunting grounds and the places of his abode. As a result of such adverse conditions the numbers of Mousterians were greatly reduced, their powers of resistance were lessened and the way was thus prepared for the incoming of the Aurignacians without appreciable effort on their part. That is, there was little organized opposition so that the Aurignacians took easy possession of the land.

The successors of the Aurignacians were the Solutreans, who seem to be a mixed people with skulls of different shapes, lacking the homogeneity of the Mousterians. Recent discoveries by Dr. Henri Martin in the Charente district of France where he unearthed three skeletons, show that the people there had a strong resemblance to the Eskimo. Most authorities believe that the Solutreans came from Asia, as the oldest of their cultures is found in Eastern Europe.

Some, however, hold that they have an African origin. For instance Reygasse has found in one oasis in the Sahara a culture which strongly suggests the Solutrean; the characteristic laurel leaf point is very abundant, but other typical forms, such as the crane-bill and willow-leaf points, are wanting. This culture is derived directly from a typical Acheulean culture, according to Reygasse, through a series of stages, each one of which can be directly placed in the succession. This idea of the Algerian archaeologist has been vigorously combatted by the North African investigator, Pallary, who regards the culture as Neolithic, not Solutrean. In any event, it would hardly seem that this single, isolated occurrence can be regarded as the fountain head of the rather wide-spread Solutrean culture. If it were so, evidences of its radiation would be found in the surrounding region. No such evidence of a trustworthy sort has been adduced although de Paniagua in a recent work accepts the possible African origin of the Solutrean, claiming that traces of that culture can be followed along the Atlantic coast of Morocco and thence northward into Spain. It would seem that this suggestion should be followed up by a thorough examination in the field.

At present the strongest evidence for the origin of Solutrean man indicates his Asiatic origin. Wherever he began his career one thing is certain; he is hardly a typical Cro-Magnon as has been assumed so frequently, either in physical character, or in his culture. Indeed his affinities, if any, seem to be with the Magdalenian rather than with the Aurignacian. No fuller descriptions of the Solutrean man can be given, as details regarding him are meagre; indeed, very few skeletons are known.

Having thus noted the peoples immediately preceding and succeeding the Aurignacian races, it is appropriate to begin a study of these important peoples, who are the object of our quest.

A list of the known Aurignacian skeletal remains is given, mainly compiled from a catalogue prepared by Luquet:

1. Skeletal remains, known as the Red Lady of Paviland, found by Buckland in 1823 in the cave of Paviland, Glamorganshire, Wales. Cranium missing—Probably the skeleton of a male.
2. Skeleton found in 1881 by the Marquis of Rochebrune at Les Cottés, (Vienne).
3. Remains of five individuals exhumed in 1868 by Lartet at the Abri of Cro-Magnon.
4. Skeleton found in 1891 at a depth of about 15 feet in the loess at Brno, Moravia.
5. Twenty skeletons, fourteen of which were complete, found in 1894 at Predmost. Regarded by some as in whole or in part of Solutrean age.
6. Skeleton found in 1910 by Hauser at Combe-Capelle (Dordogne).
7. Skeletons of two women, two very young children and three men found in 1923 and 1924 at Solutré by Depéret, Arcelin and Mayet.
8. Sixteen skeletons, found from time to time in the caves of Baousse-Roussé at Grimaldi.
9. A typical Cro-Magnon skeleton, associated with the Aurignacian culture, which has been found recently at the Cave of Prince Jean a Lautsch, 42 miles northeast of Brunn. There are some 53(1) more or less complete skeletons from which can be drawn the racial characters of this group.

The Aurignacians, as far back as they can be traced, are well established in the Mediterranean basin, living on both sides of the sea from which their culture has spread to its known limits, northward, southward and eastward.

---

(1) To this number must be added several incompletely known skeletons from the Aurignacian deposits of North Africa.

It is customary to divide the Aurignacian age into three parts, a lower, middle and upper division and these three horizons seem to appertain not alone to different cultures, but to different races. In taking this view, there is a departure from the orthodox European teaching in this regard, but the facts seem to warrant the assertion. They are certainly not all Cro-Magnons as is often taught.

The first of the Aurignacians who appear in North Africa, have certain Neandertaloid characters. The type form is the so-called Mechta man whose remains were first found at Mechta el Arbi(1) by Debruge and Mercier.

North of the Mediterranean the earliest Aurignacians do not exhibit Neandertaloid affiinities but are rather negroid, such as are represented by the Grimaldi race, or they are allied to Ethiopian types such as the Combe-Capelle skeleton.

The Mechta man has been studied chiefly by Henri Lagotala, private docent, at the University of Geneva, Switzerland. As just pointed out this man of Mechta seems to be an exception to the Aurignacians of Europe in having one or two characters of the Mousterian race. In Europe there seems to be little or nothing in common between these two races. In Africa it may be otherwise; there the first bearers of Aurignacian culture were a mixed breed, possibly of Mousterian and negroid or some other parentage.

The first skeleton taken from the Mechta site, a male, has the following characters among others: The skull has very strongly developed and prominent supraorbital ridges which are not individualized but extend as a bar across the forehead. The head is dolichocephalic but not platycephalic; viewed from above the skull is pentagonal. The nose is flat, the eye orbits small. Another skull, that of a woman, differs only in minor details from that of the male. In respect to the supraorbital ridge these skulls are neandertaloid, but the total resemblance is not close. In height they approach modern skulls with nothing of the platycephaly of the Mousterian; the face also is smaller and less prognathic. There is no clear or close relationship to the Neandertal man, but on the other hand, these people are not Cro-Magnons. They are an intermediate group and it seems best to classify them apart under the title of Mechta man or the Mechta race.

In some respects these particular skulls resemble some of the North African Neolithic skulls described by Chantro and Berthelon, the

(1) Situated in the province of Constantine, Algeria.

most signal difference being in the nose which is flat in the Mechta race but narrow and prominent in the later groups.

The Mechta man was short, the height averaging 5 feet, 4 inches.

Another burial at Mechta consisted of a woman and new born child; the skull capacity estimated by the formula of Manouvrier was 1213 cubic centimeters, the cephalic index 76.46, the face large, the nose narrow, the eye orbits round and the face rather long and with moderate prognathism. The height of this person was 4 feet, 9 inches.

Several other skeletons have been found in the Mechta shell heap, but from the description of the excavators it seems quite probable that they are intrusives and have therefore no place in this discussion. Quite recently the Logan Museum expedition found the skeleton of a child there but this has not, as yet, been studied.

Judging from the very meagre description of the mechta race available, there were several types of people moving over the North African plateau during the Aurignacian period; none of them were of the true Cro-Magnon type and yet they possessed the same culture. It is evident that Aurignacian culture was not necessarily of Cro-Magnon origin but was more probably of African origin, developing among wandering groups living on the wide expanses of that continent from which it made its way to the northern shores of the Mediterranean. The very primitiveness of the earlier Aurignacian in Africa makes this assumption entirely reasonable.

Both Breuil and Obermaier have suggested, at least for Spain, the presence of a pre-Aurignacian (pre-Capsian race they would call it). According to these very competent authorities this race was not Neandertaloid but approached the *Homo sapiens* type. The race seems to come from Africa and pushing up into Spain during the Chellean-Mousterian ages, began modifying the culture they found there by combining their methods with those already in the land. From this combination arose the culture we now call Aurignacian; this they carry with them as they proceed north into France and on into Central Europe. The author cites this statement in order to show, according to good authority, that the very beginnings of the Aurignacian probably hark back to the soil of Africa.

The assumption that there were mixed races at this time, arising from the commingling of diverse peoples, is based on good authority. In the case of the Broken Hill skull found in South Africa, the eminent Italian authority, Battaglia, states that this skull is intermediate between those of the Neandertal race and a more modern type, perhaps *Homo sapiens.* The Boskop cranium, also of South Africa, is an intermediate form but with strong Cro-Magnon characters. Apparently this Boskop man long antedated the Aurignacian age and he furnishes additional evidence that high grade men of true *Homo sapiens* characteristics lived in Africa along side of the Mousterian, although of a different species. The well known Rhodesian skull is probably Mousterian, a form with whom the higher grade Boskop men crossed to produce such intermediates as seem to be present.

Again in Europe the so-called London skull, found recently in an excavation on Leadenhall Street, gives evidence of an intermediate race. This skull has been described as Mousterian; G. Elliott Smith regards it as intermediate between Neandertals and *Homo sapiens.* If this surmise is correct these mixed groups were already appearing in Mousterian days.

The writer has made a rather long digression to show that there is a possibility that men, such as Mechta man, have appeared who were a mixture of Neandertal characters with those of a higher race. The ground is so often taken that the Neandertal people were such an inferior, animal-like group that higher races had absolutely no physical relationships with them. While the writer sympathizes with this view, yet it is wise to present evidence to the contrary and to show that there were mixed breeds whose parentage was both Mousterian and Aurignacian.

If Neandertal man was present in Africa, as we have every reason to assume, and a higher type like Boskop man was present, as he doubtless was, then it is certain the two interbred, if they were contemporaries. To deny this is to fly in the face of man's natural and inherent tendencies; it is a denial of what the so-called higher races have always done in historic times, the result of which has been a vast mass of so-called half breeds who are found the world over. To this act of mixing the blood of high and low we apply the term, *miscegenation.*

Miscegenation is not a peculiarity of modern times; it has occured all through human history and we may well believe it took place between Mousterian and *Homo sapiens* back in the days of the mammoth and the cave bear.

The earliest Aurignacians of Europe, thus far discovered, are the Grimaldi race and that founded upon the Combe-Capelle skeleton, the *Homo aurignacensis* of Klaatsch.

The Grimaldi race is based upon two skeletons found at Grimaldi, on the Italian coast near the French frontier. This race was short of stature, about 5 feet, 4 inches, the heads large, elongated (dolichocephalic), with a cranial capacity equal to that of modern man. The face is large and broad but not high and the forehead is well developed. The nose is flat, the jaws protrude forming a marked prognathism, the jaw is of such conformation that there was small space for the movements of the tongue. According to the trustworthy French authority, Boule, the Grimaldian is strongly negroid if not negro. By many they are believed to resemble the modern Bushmen more or less closely in general form and appearance.

In so far as Combe-Capelle man is concerned there is no evidence that it is to be regarded as the typical Aurignacian man as Klaatsch believes. The Combe-Capelle man was short, not much exceeding 5 feet, with a dolichocephalic head whose cranial capacity is not large. The orbits are small, the forehead is sloping (there is a rather strong tendency to prognathism) and the nose is flat.(1)

A similar type has been named *Homo taganus* by Mendes-Correa, after remains found in the shell heaps of Portugal of epi-Palaeolithic age. The Combe-Capelle man is quite different from the modern Mediterraneans and has been variously named Eurafrican or proto-Ethiopian. People similar to this race are still found in North Africa, as for example in Tunis, Abyssinia and Somaliland. From its skull features, which show strong Ethiopian likenesses, Boule concludes that it is not a new species as assumed by Klaatsch, but is simply a variant of the Cro-Magnon race. If Boule's idea is admissable then the Cro-Magnon type appeared in the Lower Aurignacian antedating the typical men of that group in the Middle Aurignacian, or at least antedating their first known appearance.

In the Middle Aurignacian there appear definitely the most striking men of the Palaeolithic, the true Cro-Magnons, and this man may be taken as the type of the Middle Aurignacian peoples.(2) This type was found in the now famous abri of Cro-Magnon at Les Eyzies, Dordogne. There were five skeletons in this shelter; those of an old man, a woman, an unborn child and two young men.

The stature of these representatives of the race is great, being 5 feet, 11½ inches for the old man and averaging 6 feet, 1 inch for the young men. The broad, convex forehead is typical of this group, but there is disharmony between the form of the head and that of the face. The head is strongly dolichocephalic; it is long, narrow and high; seen from above it has a pentagonal shape. The face, on the contrary, is short and broad, accentuated by prominent cheek bones.

---

(1) Bosch-Gimpera et L. Pericot—Civilization de la Peninsula. Iberique L'Anthropologie, Tome 35, nos. 5-6, p. 415.

(2) Exceptions will be taken by some authorities to this statement on the ground that the skeleton of the old man of Cro-Magnon is exceptional and is not trustworthy as a standard. Doubts about the value of using him for purposes of comparison have arisen and proposals to take the later Chancelade man as the standard Cro-Magnon, believing him to be a more normal type have been advanced.

The skull has a cranial capacity of 1590 cubic centimeters; the brain is therefore large and it is also highly organized. The orbits are broad, in outline quite rectangular, but rather closely juxtaposed, so that there is small space between the eyes. The nose is Roman in type, narrow and aquiline, the lower jaw is heavy and thick with a prominent chin and the indications are that the jaw muscles were large and powerful. The whole body was well proportioned and splendidly developed, especially at the shoulders; the limbs are long and straight; the hands and feet also are long and quite large; the fingers are not, proportionally, as long as in modern man. The Cro-Magnon is perhaps the finest race physically, if not mentally, that has yet appeared upon the earth.

In the Upper Aurignacian appear yet another race or races which have Cro-Magnon affinities but vary a good deal from the pure strain as represented in the Middle Aurignacian. The skeletons found at Předmost and described by Maschka are probably Upper Aurignacian as are also the skeletons exhumed at Solutré by Depéret, Arcelin and Mayet and described by them.(1)

At Předmost some twenty skeletons were discovered, the skulls of which are different from those of the Middle Aurignacian of Western Europe. Some are dolichocephalic, but some approach brachycephaly and a wide diversity of skull forms is apparent which indicate varietal differences.

The skeletons found at Solutré are, without doubt, also Upper Aurignacian. The height of one, a male about forty years old, was five feet, 8 inches. The skull tended toward mesocephaly (index 77.89). The face was large and short with prominent cheek bones and quadrangular orbits. The other skeleton, that of a woman, had a height of five feet, 1 inch, a brachycephalic skull (index 83.24), face large and short, orbits oval and oblique, large nose and powerful jaws. The woman, at least, is not closely related to the Cro-Magnons, but has similarities to the Předmost race; in both cases the crania are less elongated than is the case with the Cro-Magnons. Both of these Solutré skeletons have an individuality all their own which testifies to considerable variation from prior Aurignacians. If they or the Předmosts be looked upon as Cro-Magnon, then that race is far from being homogeneous.

It seems, in the light of our present knowledge, that it is better to regard the Upper Aurignacian as a people separate from the Cro-Magnons assigning them to a race called the Předmost by some, or the Loess men by others. At least this provisional classification might hold until more definite knowledge is at hand.

---

(1) Compte Rendu de l'Academie des Sciences, Dec. 15, 1924.

It is safe to assume then that in the Aurignacian age a variety of races present themselves to view and that one is justified in making some such classification of them as has been attempted in this work, realizing at all times that such assignments are tentative, to be readjusted as greater knowledge comes to us. The whole racial problem at this time is a baffling one and is incapable of settlement in the present state of our knowledge.

The Middle Aurignacians, the true Cro-Magnons, stand forth as the most marked and unique people of the whole age; they are the most worthwhile group of the whole Palaeolithic period; they are bearers of Aurignacian culture, but apparently, are not the originators of it. It would seem that the Mechta man had that honor.

We thus see that the Aurignacians are a varied people with little racial uniformity. The factor that classes them under the name Aurignacian is not so much physical likenesses nor conformity to certain racial standards; there is little of that although they are all *Homo sapiens.* The factor that unites them is that they are carriers of one typical culture that we call Aurignacian. It is their cultural features that make them Aurignacians rather than their physical features.

Whence they came,(1) whither they went, are matters of doubt; they appear for a time; they influence the course of incipient civilizations briefly and then pass on. The question of their ultimate fate is an interesting one and may claim briefly our attention although little definite information is at hand. Do they still live in modern peoples or have they become wholly extinct?

In so far as the Lower Aurignacians are concerned, the Mechta men have no modern representatives; they have probably become extinct and their crude and somewhat brutal physiognomy no longer appears among men. Either that, or they have become so completely absorbed by later peoples that they can be no longer recognized as entities.

The Grimaldi group obtained little foothold, apparently, in Europe; the center for this people was in North Africa from whence they migrated northward and southward. The northward moving group seem to carry the Aurignacian culture to Europe and thus render a great service to the ongoing of Palaeolithic civilization, but the carriers themselves leave but little evidence of their appearance. They are not distinctly represented in modern Europeans although some Italian and other investigators have reached a different conclusion and their views should be stated. Haddon has discussed the presence of Eurafrican peoples in Europe at the present day⁽¹⁾ and quotes the investigators Sergi, Giuffrida-Ruggeri and Fleure who think they have found the presence of this stock in Northern Italy, Sardinia, Northern Portugal, Spain and in several isolated localities of Europe. According to these authorities the strain is an ancient one that has continued to persist in remote and out of the way places. These views that the early Eurafricans of the Aurignacian still live in modern Mediterranean peoples is worthy of passing notice and may of course be true. Whatever may be thought of their presence in Europe, it would seem that their blood still flows freely in the veins of Hottentots and Bushmen who, in a measure, have inherited also their culture. In physical features the Bushmen and the Grimaldians are closely similar and they may be related.

---

(1) Pittard, one of the most thoughtful and careful students of racial history, makes the suggestion in his recent work, "Les Races et l' Histoire," pp. 73-74, that the Cro-Magnons may have been derived from the Piltdown man who lived in what is now England. If so they were contemporaries of the Mousterian and developed along side of him.

Whether the typical Middle Aurignacian is still represented in modern man is a matter of controversy. Pittard,⁽²⁾ in discussing the diversities of race already apparent in the Aurignacian, would divide the Cro-Magnon group into two divisions, one embracing men of tall stature with a mean height of 1.82-1.87 metres, such as the Cro-Magnon proper, and one of short stature such as the Chancelade or Laugerie men with a mean of 1.62 or 1.63 metres. The Chancelade-Laugerie groups are not Aurignacians but rather Magdalenians and their fate does not concern us here save to say that they are probably widely represented among Mediterranean people.

The tall-statured Cro-Magnons who do concern us in this inquiry seemed to move southward, possibly before the advance of the Upper Aurignacians or of the Solutreans. These people took refuge, as best they might, in various remote districts where they have left descendants who still portray their peculiar characteristics. It is especially among the Guanchos, indigenous people of the Canary Islands, that they seem to be most fully represented. Some regard the Kabyles of the Atlas ranges as a remnant group in part. It may be that the true Cro-Magnon—he of the tall stature—still exists in the people mentioned although his blood is much diluted by various

---

(1) Les Races Humaines—A. C. Haddon.
Paris. Felix Alcan pp. 43-44.

(2) Op. Cit.

subsequent admixtures. The peculiar culture which he had in the hey day of his glory—Middle Aurignacian—has gone, and little of its distinctive qualities can be recognized as existent among living peoples.

Certain German investigators have regarded the Cro-Magnon as having migrated northward and as having entered into the composition of the German people and more especially of the Saxons. If this be true their peculiar physical characters have been blotted out pretty largely.

As a general conclusion it is probable that the earlier Eurafricans have impressed themselves most markedly upon the present Mediterranean people, while possibly the Cro-Magnons have left part of their heritage to the so-called Nordic peoples and part of it to indigenous people in North Africa.

Of the Upper Aurignacians, little or nothing can be said as to their fate. There are already mixed groups, probably forerunners or foreshadowers of the Neolithic peoples and the most that can be said, at present, is that they finally merge with them and become lost to our view as an individual group, even if they ever were such.

Some fuller discussion of this general question of the Aurignacians' fate is reserved for the chapter on the "Life and Customs of the Aurignacians."

CHAPTER SIX.

STONE AND ITS USE BY PALAEOLITHIC PEOPLES

The basic material used for utensils and weapons among Palaeolithic men is stone; they and their culture cannot be understood apart from this material.

Early man used stone of many kinds and he used it for varied purposes. The favorite material was flint and the great majority of all utensils in all parts of the earth were made of it during the Stone Period. The reason for this choice of flint above other materials lies in its peculiar qualities which made it of particular value to earlier races. Some of its useful features are as follows: It is hard, being composed of silica, the hardest of all common minerals, ranking 7 in a scale of 10. It is brittle and for that reason it is comparatevely easy to throw off flakes large or small, as desired, from the parent core either by percussion or by simple methods of pressure. It is true that flint is resistant and that it has good powers of cohesion, but when struck a sharp blow with another stone the resistance is quite easily overcome and the shock causes a piece to be thrown off.

It has conchoidal fracture; that is, pieces detached by percussion or pressure, have a curved surface. One face of the flake may be flat but the other is curved, or the whole flake may show curvature. This conchoidal fracture produces on all flakes rather sharp cutting edges which was of great advantage to primitive men. It enabled them to secure a good natural edge which served its purpose without any secondary treatment whatever. Men often used these flakes for knives or scrapers without any effort save that required to separate the flake from the parent nucleus.

However, flakes were commonly reworked by the process known as retouching or chipping. Retouching can be accomplished very simply with a bluntly pointed piece of bone or ivory by pressing it upon the flake at any desired point until a small piece is detached. By repeating this process the flake may be shaped into any desired form. More accurate work can be done by retouching than by percussion because in retouching the bone point or chipping implement can be placed accurately wherever the worker desires to remove a piece while in the percussion method the blow struck by the coarse hammer stone cannot be delivered with as great care and accuracy. The worker cannot always be sure that he is going to strike the flint he is shaping at just the point he desires. In addition, the flakes produced by percussion are larger and coarser than those resulting from pressure, other things being equal, and no such fine work can be produced as a result.

Earlier Palaeolithic men used percussion methods quite exclusively and their work is correspondingly crude. The more finished and shapely utensils of the Upper Palaeolithic are secured in large degree by the better technique of retouching.

Flint is colloidal in structure, normally very homogenous and responding uniformly to a given treatment. Its homogeneity of structure and composition cause it to be a very reliable material. Flint is very often partly crystalline in structure, it may also have admixtures of other ingredients than silica, and in proportion to its crystallinity and to other material present it is rendered ineffective as a material for utensils and its value greatly lessened if not destroyed.

No other type of stone had this peculiar combination of good qualities and hence no other served early man as did flint and its close relatives—chert, jasper, chalcedony, agate, etc., with the exception of volcanic glass—obsidian, which is comparatively rare.

For some purposes other types of rock are of equal value to flint and even preferable. For hammers, used in crushing bones or hammering other rocks, a less brittle and tougher rock, fine grained igneous rock, is desirable. However, when a good point for piercing or a good edge for cutting was needed, flint was the best material to be had.

Flint was the most important raw material of a mineral nature in the category of Aurignacian man. It was sought everywhere. It was an extremely important article of exchange or trade and the presence of large deposits of good flint was often a prime factor in determining the location of human groups. That it was an object of commerce is seen in the presence of flint on Aurignacian sites which is not found in the neighborhood, but has been brought in from a distance either by commerce or by individual effort.

The best flint in Europe came from the chalk beds of Southern England, Northern France, North Germany, Belgium and Denmark. There is no better flint in the world than this flint of Cretaceous age. That occurring in North Africa is of the same age, but it is often of much poorer quality. The Egyptian flint from the nummulitic limestone of Tertiary age is of superior quality, comparable to that of Europe.

When there was no flint, man was forced to use other materials such as quartzite, crystalline quartz, fine igneous rocks such as basalt and stratified rock as compact limestone, sandstone and others. These materials frequently were not desirable for utensils but necessity demanded their employment in place of something better. People who were obliged to use such inferior materials were driven to trade for flint, if it could be obtained, or they were forced to make long journeys in search of it.

Flint occurs normally in small masses or nodules in calcareous rocks; sometimes it exists as beds intercalated in the limestone strata.

When first taken from the quarry flint contains a good deal of free water called quarry water and is then more brittle and works more easily than when the water has evaporated. The sooner it is worked after quarrying, the better. As the contained water evaporates it deposits on the surface of the flint any soluble material that it has brought out from the interior. In this way a crust is formed over the surface after a long period of time. This coating is called *patina.* It is variously colored, commonly depending upon the amount of iron present in the flint. If no iron is present the patina is white; if it is present, the patina is yellow, brown or red.

There have been numerous attempts made to determine the age of flint tools by the depth and amount of patination upon them, but the method is unreliable and can be used only under exceptional circumstances. In Eastern Algeria the writer has seen flint utensils of Aurignacian age from the same bed lying almost side by side, one of which would be well patinated and the other scarcely at all. This indicates how unreliable as a test of relative age patination can be. Patination may be observed on flint from all regions but it is most noticeable on that from dry areas; it is very marked on the utensils coming from the Sahara Desert. When a tool has been made in one period and then reworked in a subsequent one, the patina on the earlier worked surface will be greater than that on the more recently worked portion, thus one is able to distinguish which part of the tool was worked first and which later.

When the Aurignacian worker desired flint for any purpose he went to a quarry which he or his predecessors had established and secured flint nodules from the limestone or chalk. The nodules were often partially treated at the quarry, then carried to a work shop site or to the abri and there fashioned into the needed utensils.

Much of the fashioning of tools was accomplished in the abri or dwelling places of the Aurignacians and especially in the rear portion.

In the excavation of the Abri Cellier at Le Ruth (Dordogne), leased by the Logan Museum, the writer found in the very rear of the shelter a bed nearly a foot thick in which were innumerable nuclei, large flakes and chips, broken tools and an occasional finished specimen. Abri, such as this served as dwelling place, work shop, kitchen, dining room, and chamber for the dwellers of the land.

In order to obtain flakes of any size from the nodule it was necessary to prepare a flat surface, known as the striking platform. This was accomplished by striking off the top of the nodule. By delivering a blow on this flattened surface with his stone hammer, the worker could throw off a flake without the hammer glancing off, as it would be likely to do on the curved surface of the nodule.

The Aurignacian man made very careful preparation for the production of flakes and that is one great reason why his work is superior to that of earlier peoples. He left nothing to chance. After making the striking platform the worker started to throw off flakes from the nodule in more or less symmetrical fashion on all sides. The nucleus left after the flakes were removed is commonly a fairly regular geometric figure of four, five or more faces.

If the artisan desired long narrow flakes for knives or scrapers, he used long nuclei or large pieces of flint; if shorter and broader flakes, he utilized more globular cores. The direction in which a flake is struck off from a core helps to determine the shape and general character of the flake.(1) If it is struck off across the grain of the nucleus by an upward blow, the resulting flake is small and has an irregular surface, due to the hackly fracture of flint, at right angles to its grain. If the blow is delivered on the striking platform somewhat obliquely and outwardly a long narrow flake results with thin edges, the true blade or *lame,* as the French call it. If the flake is thrown off from the third dimension of the nodule, small but relatively wide flakes are produced. The character of the flake is also determined by the degree of force applied in separating it from the core and the direction of the applied force. If the pressure or the percussion is chiefly downward then a larger flake is formed than when emphasis is laid on outward pressure or percussion. The more glancing the blow, other things being equal, the broader and shorter the flake. For very large flakes, large cores were necessary and much force in a downward direction had to be exerted to separate them.

The Mousterians are noted for the large, heavy flakes they were

(1) Burkitt has given a good discussion on this matter in his "Prehistory."

able to produce. In no small degree this ability was due to their great physical strength. The Aurignacians made longer, thinner and narrower flakes of finer quality than did the Mousterians. They understood the qualities of flint better, had better ideas about working it and made better nuclei and flaking tools. The contrast between the two industries in this respect is great.

Natural flakes, those made in a state of nature, without man's aid, are often found. The question may arise in the mind of the field worker: Is this flint piece which shows no retouch or any sign of use natural or artificial? The answer to such a question is not always easy.

Ordinarily if long narrow flakes are found anywhere it is almost certain that they are artificial, that is, they are of human production. It is far otherwise with the small, irregular flakes or pieces of flint. They may be produced by natural agencies such as alternating heat and cold, frost, transportation by streams or glaciers, by landslides or slow earth creep. Also, natural flakes may result from any natural cause or circumstance by which a sudden blow or a long continued, powerful pressure is applied to a mass of flint. In so far as the writer has observed, nature does not and cannot produce the long narrow flakes so characteristic of the Upper Palaeolithic.

A great controversy has arisen over the whole problem of natural vs. artificial flakes and other flint pieces. The so-called eoliths are believed by many to be of human workmanship, while others as stoutly maintain that they are produced by natural agencies. The eoliths belong to that category of flint fragments in which it is difficult to determine whether they are produced naturally or artificially. While it is true that many have arrived at the conclusion that they are natural, yet the trend of scientific opinion, at the present moment, seems to favor the idea that they have been shaped under human guidance by very primitive and early men.

There are differences of opinion as to the methods used in removing flakes from the nuclei and chips from flakes. It has been held that methods of heating and cooling were used, and it is true, as already stated, that nature flakes flint in this way. The flint highly heated by the hot sun during the day and cooled by rapid radiation at night does scale off, but the resulting pieces are not only quite irregular, but very dissimilar; no two pieces are alike. It is not likely that human beings used this hit and miss method. In human craft the flakes are more or less alike, there is much sameness in them. They do not have the diversity that heating and cooling would cause.

Some writers hold that the nucleus was highly heated and then single drops of water allowed to fall upon it. The sudden cooling at one point caused a contraction on the outside which made a piece spring off. Experiments along this line do not indicate that it is possible to secure flakes by such a method. As already indicated, it is entirely probable that percussion and pressure were the sole methods used.

When one throws off a flake, the fresh face, that which lay next to the nucleus, generally has a convex surface and at one end where the blow of separation was struck there is an abrupt swelling or convexity called the bulb of percussion. If the right kind of blow was delivered, there is at the summit of the bulb a small, sharply defined cone, the cone of percussion. This cone is very commonly absent from flakes; its production seems to require a special but unknown type of percussion. The protuberant bulb of percussion leaves a corresponding cavity on the nucleus. As a result the outside of the next flake carries a depression; the inside has the bulb. It is sometimes asserted that natural flakes have no bulb of percussion but such statements are erroneous for flakes of this type do carry the bulbs. Hence, the presence of a bulb on a flake is not an evidence, necessarily, of human workmanship, as once believed. Commonly, the bulbs of natural origin are flatter and less accentuated than the artificial ones, but it is not safe to make distinctions on this basis.

Aurignacian man was an expert in the flaking and chipping of flint, although he did not equal the Solutreans, nor some of the Neolithic men in his ability to produce the remarkable pressure flaking extending across broad spear heads or knife blades. This kind of flaking, if well done, results in the ripple mark surface so beautifully shown on Neolithic flint knives from Scandinavia and Egypt. In most respects, however, the Aurignacians were able workers in flint; this is clearly shown by the retouch upon the thick carinate scrapers so characteristic of their age. In such work, with its long, narrow, radiating retouch, they have been rarely equalled and never excelled.

CHAPTER SEVEN.

THE UTENSILS OF THE AURIGNACIAN AGE

A description of the utensils both of stone and bone will be given, following, in a general way, alphabetic order.(1) In these descriptions the French term *éclat* will be used frequently for the large and rather broad flake, and the word *lame* for the long narrow types. In the descriptions both the English and the French term for the utensil is given. An account of the flint artifacts is given first, followed by those of bone.

ANVIL *(enclume)*

This term is applied to large nodules of flint which have been trimmed down to an edge on one side. In use the anvil was placed edge up and objects to be broken were placed upon it and hammered until the desired fragments were obtained. The term anvil is also applied to large flat stones, generally of tough igneous rock, or to large pieces of bone. The material to be crushed or broken was laid upon these flat surfaces and hammered until the desired results were forthcoming.

AWL *(percoir)*

These tools were made both from flint and from bone. Those of flint were generally made from éclat or lames, the point being formed at one angle of the flake. Sometimes the lame is trimmed so as to bring the point in the center. The flint awl generally has a very short point and was probably less effective than the bone awl except for piercing the very toughest skins.

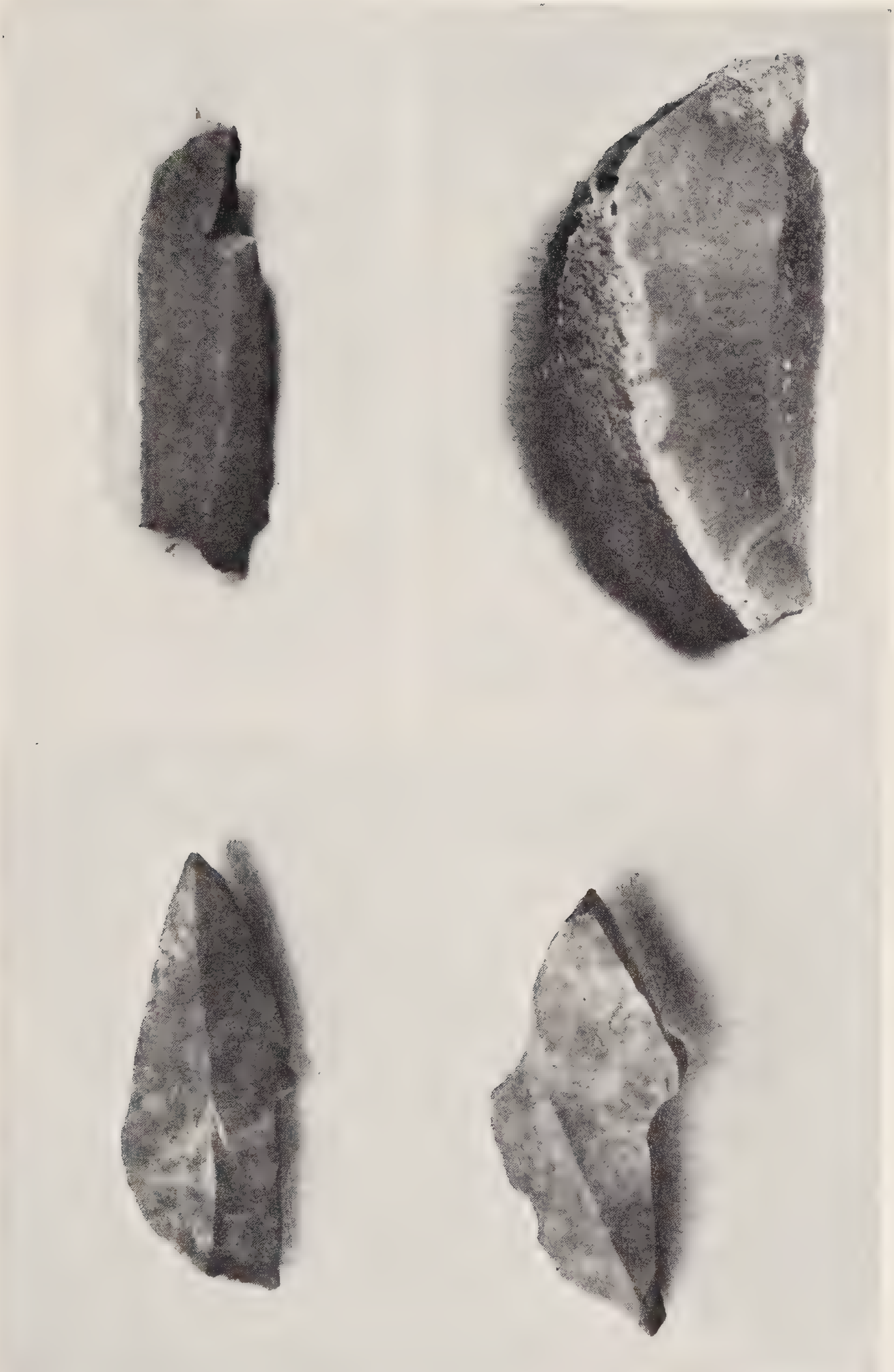
CORE *(nucleus)*

A core is that which remains of a nodule after a number of flakes have been removed. In those cases where choice flint is used or where it is very scarce, there is a tendency to utilize the core to the utmost. Cores of this kind are apt to be quite symmetrical and tend to be somewhat dome-shaped or coniform. In cases where the flint is of poor quality or where there is a great abundance of it, very often only a few flakes were removed here and there from the better portions of the nucleus, after which it was cast aside. Such cores are commonly irregular. Some of the most attractive pieces that have come down to us from the Palaeolithic period are the symmetrical flint cores.

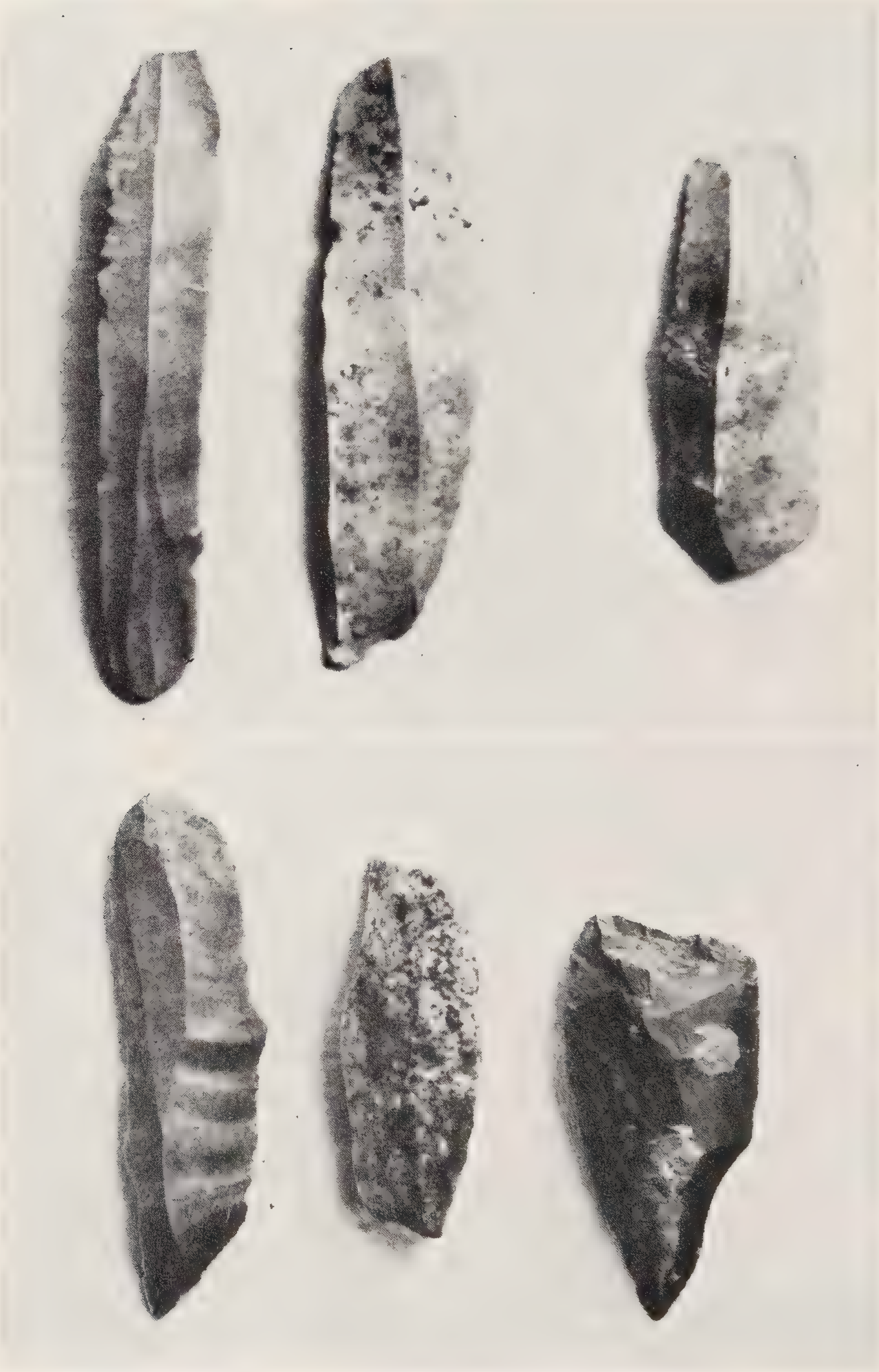
The Aurignacian man often tested the flint by making partial

---

(1) Burkitt has given a more comprehensive and more complete description of utensils than can be attempted here in his general work, "Prehistory." M. C. Burkitt—Cambridge Univ. Press, 1921.



Upper Left—Burin Busqué from Abri Cellier. Upper Right—Audi Blade from Le Moustier (lower level) France. Two Lower—Double Burins from Abri Cellier



Three Upper—*Burin de Fortune* from Abri Cellier 2nd level, Le Moustier, France. Three Lower—Knives *(lames)* from Abri Cellier.

cores at the quarry and as a result numerous irregular cores are found on old quarry sites as well as in abri. If they found irregularities in the flint such as fissures or cavities or crystalline patches, the piece was rejected. Often one portion of a flint nodule was good while the other parts were bad. In such cases flakes were removed only from the good portion. The Aurignacian man did not wish to endanger the quality of his tools by using faulty flint if he could avoid it. In some cases flint cores were rejected not because of any flaws, but because the material had an irregular fracture and broke before a lame of reasonable length could be secured. Sometimes, too, cores were cast aside because the fracture was such that a good flat striking platform could not be obtained, the flint breaking in curves and not in planes.

GRAVER *(burin)*

This is a tool with a graving point or short edge at one angle of the flake or at some central point between. Frequently the graving portion is made by throwing off a flake along the length of the burin and then, if necessary retouching the flint to produce the desired point.

Some investigators, Burkitt for example, state that the test of a genuine graver is the evidence that this longitudinal flake has been removed. However, many flints were used for graving which did not have this flake struck off. These form that numerous class called the *burin de fortune* by the French. Such burins have no flaking or retouch upon them; they are simply lames broken across accidentally or otherwise to form an edge which was excellent for graving purposes and was so used.

The graver first appears as a working tool in the Aurignacian and it is one of the great gifts made by these people to civilization. The writer has found this tool at the very lowest level of Aurignacian deposits commingled with flakes of Mousterian type but he has never found the burin in definite Mousterian horizons.

There are many varieties of the graver which become differentiated in the course of the Aurignacian age. The classical type is the simple burin formed at the end of a lame *(au bout de lame)*. This commonly shows much wear and tear and may or may not be retouched along the sides. Another related type is the burin made upon a thick triangular éclat, the triangular burin. In this type each of the angles may be shaped into a burin forming the triple burin.

The double burin *(burin double)* is a common type, having a chisel edge at each end of the flake. Here again the sides may or may not be retouched. The parrot-beak burin *(bec de perroquet)* is another common form and, as suggested by the name, has somewhat the shape of a parrot's beak.

Burins with a straight working edge, either nearly horizontal or strongly inclined and retouched along the cutting edge are termed angle burins *(burin d'angle)*. If the graver edge is produced simply by the removal of a flake rather than by retouching it is termed a single-blow graver *(de coup single)*.

Very often the graving edge is formed, not by retouch nor by the removal of one flake, but by the removal of several small flakes, leaving several minute facets which intersect each other at varying angles and thus forming what has been called the prismatic burin *(prismatique)*. There are several varieties of this type, mention is made of only a few of the more important ones. The most characteristic is the carinate or beaked graver *(à carène);* this tool resembles somewhat the inverted prow of a ship, hence the name carinate or keeled. These tools often have a notch on one side and some classify them on the basis of the presence or absence of this notch. Probably it was purposely worked out to permit the application of the finger to aid in holding the piece.

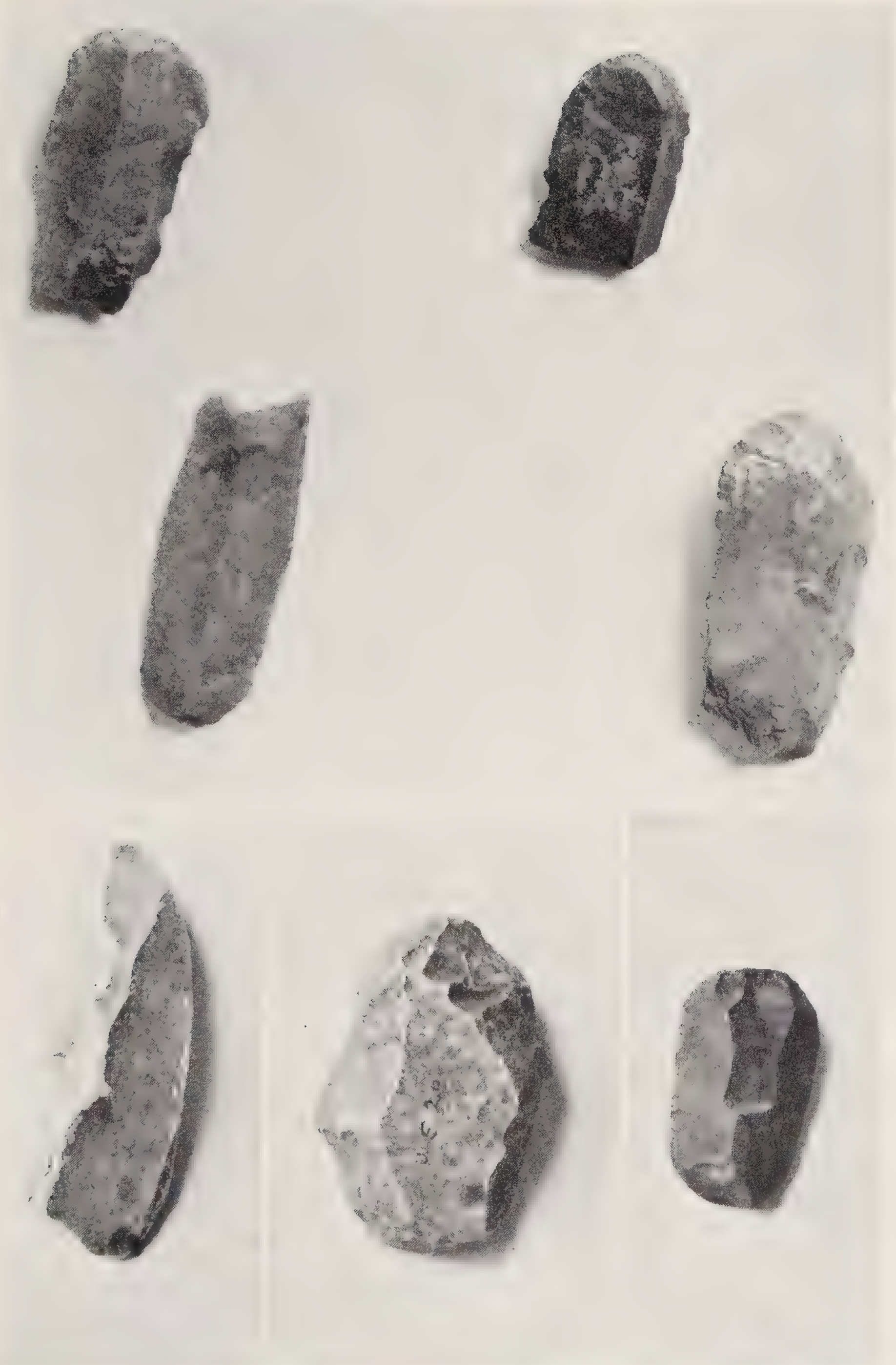
Related to the carinate graver and possibly a derivative from it is the busque graver *(busque)*, the most common of the many facetted type. It has a uniform curve on one side, generally the left, formed by the removal of several flakes, while on the right side one flake only is taken off.

The simplest of the prismatic group is the flute beak *(bec de flute)* which is derived probably from the carinate graver but instead of having several flakes removed the burin is made by taking off two flakes only, one on each side of the graver edge.

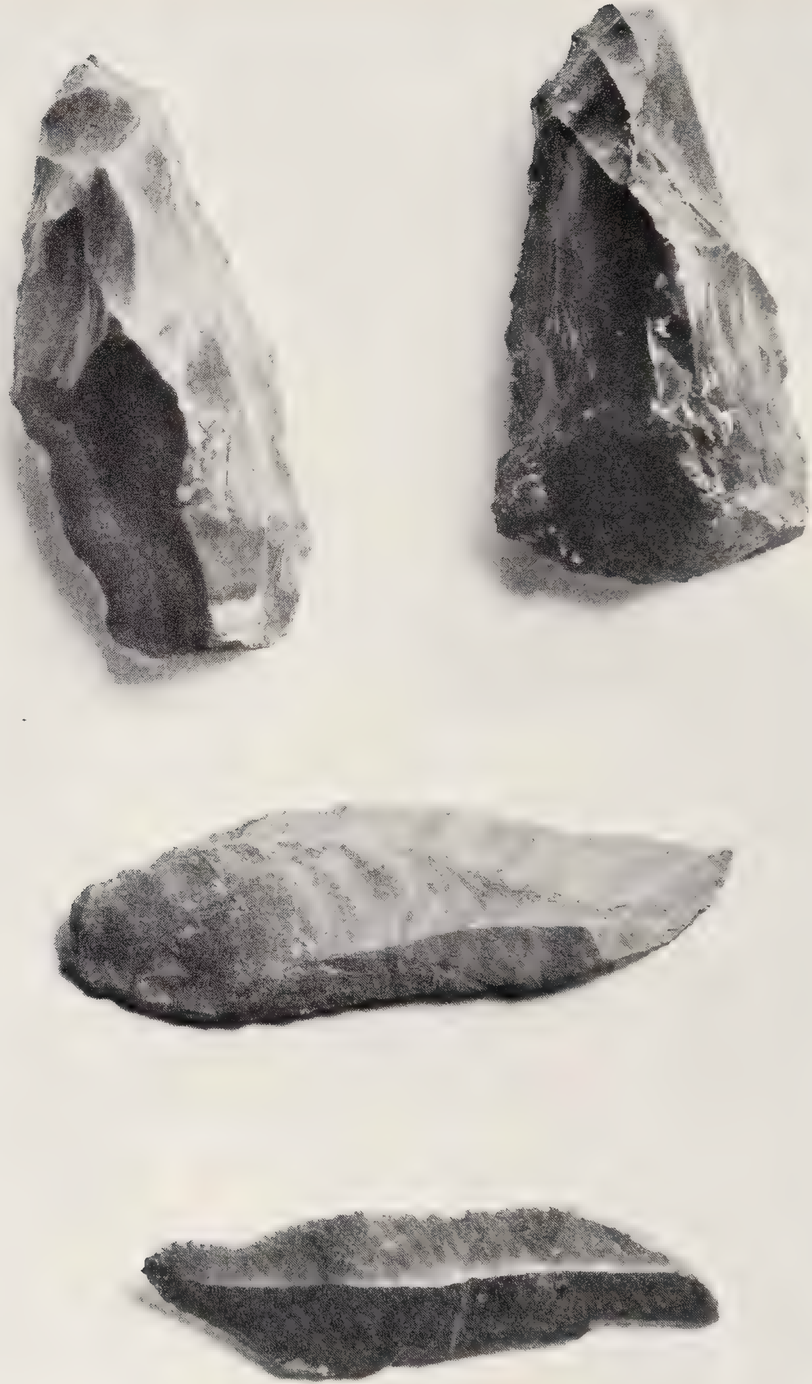
Burins differ greatly in sizes as well as in form; some of those from the earlier Aurignacian are exceedingly coarse and heavy, three or four times the size of ordinary types. This crudeness and lack of finish suggest either a mere beginning in burin manufacture or, as some interpret it, Mousterian influence. The burin is so preeminently an Upper Palaeolithic tool that the latter surmise hardly seems probable and hence the author believes its crudeness is due to the inexperience of early Aurignacians in this type of work. On the other hand gravers may be small and delicate such as the pygmy graver. On the whole gravers tend to become simpler and to lose their elegant retouch as the upper reaches of the Palaeolithic are approached. The Middle Aurignacian period is the noontide of the burin although evidences of its use are more abundant in the Magdalenian.

Hammer Stone *(Percuteur)*. These are hard cobble stones of smooth, ovoid shape, generally quite water worn which have not been shaped primarily by human effort, but rather by natural agencies. These tools were held in the hand and used as hammers, such use being indicated by the abrasions at the ends which mar their native shape and smoothness. Hammerstones are frequently found in connection with bones left from Aurignacian feasts and were used to crack the bones in order to secure the marrow. Very often they show rough usage and are greatly battered.

Since hammerstones are of quite varied size and weight, it is probable that they had several uses. Flint nodules were rarely used as hammers although they often had the requisite shape. Probably



Two Upper Left—Burin-End Scraper *(burin-grattoir)* from Abri Cellier. Two Upper Right—End Scrapers *(grattoir)* from Abri Cellier. Two Lower Right—Oval Scrapers from Gorge d'Enfer near Les Eyzies, Fr. Lower Left—Side Scraper *(racloir)* Abri Cellier.



Two Upper—Keeled Scrapers *(â caréne)* from Abri Cellier. Two Lower—Madgalenian Parrot Beak Burins *(bec de perroquet)* from La Madeleine, Fr.

they were too liable to fracture. Tough crystalline rocks such as quartzite, gneissoid, or granitoid rocks were preferred. The structure of such rocks tends to make them more resistant to blows and they do not crumble and break up as readily as aqueous rocks do.

(LAMES). These are long narrow blades or flakes, very commonly not retouched at all but worked on one side or the other. These flakes, have a wide range in length, width and thickness. In the Aurignacian there is one type of retouched lame which is fairly abundant and quite artistic: the notched flake *(lame encoche)*. These are typical of the Middle Aurignacian. The notches may be on one or both sides of the blade. When on both sides they may be or may not be opposite each other. If opposite they produce the strangulated blade *(lame etranglé)*. These indentations are retouched generally and this indicates that they had some definite purpose. It is probable that they were finger holds and were retouched to prevent injury to the fingers as they held the blade and used it. Many think they were used in shaping bone or wood; that is, they are spoke-shaves. This is a very likely use as the spoke-shave would be very helpful in rounding off bone or wood. Several other ideas have been advanced regarding this particular lame. Some have seen in these indentations merely an accidental breaking out of a piece of flint and in order to repair the damage as much as possible and to make the indentation shapely they retouched it. This explanation does not apply to many blades since the notches are carefully spaced or put opposite each other. Some believe that the Aurignacians hafted these blades and the notches were made in order to bind the blade to the handle more securely with ligatures.

Very likely all of these and probably other purposes were met by these interesting utensils. The notched blades have the ends pointed or blunt; the former is the more common, particularly at the famous midden of horse bones at Solutré. Generally speaking the pointed form is most common in the Middle Aurignacian while the blunt type is distributed all along through the age.

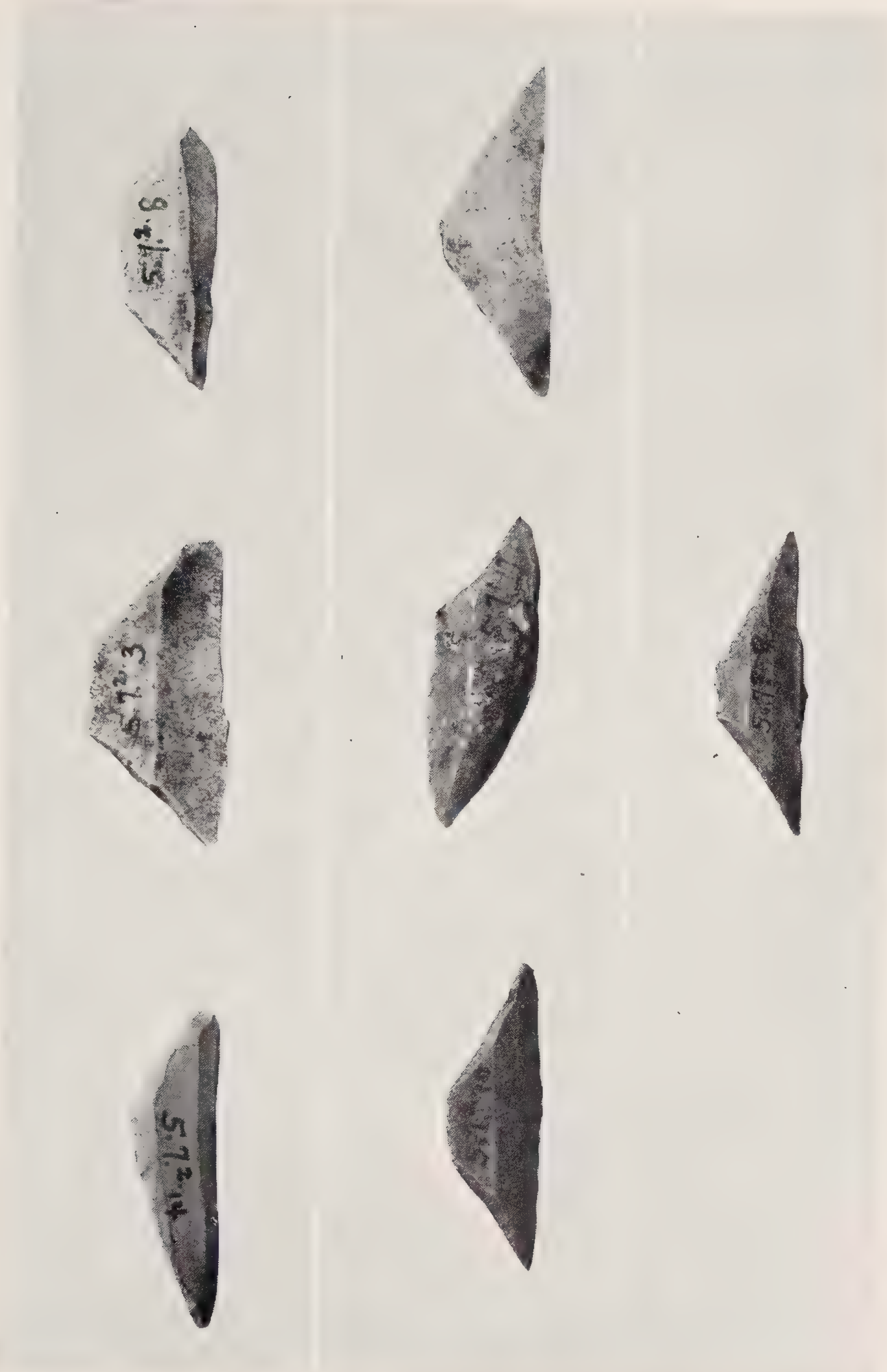
MICROLITHS. Beginning in the Aurignacian and continuing on through the earlier Neolithic time there is found quite an array of small flint flakes, with delicate retouch on ends or sides, forming small blades, gravers and drills. In the Aurignacian age they are frequently crescentic; later they have various geometric shapes, triangles, trapezoids and rectangles. The term applied to these small flints is microlith. The microlithic industry is well developed in the shell heaps of North Africa where it forms a connecting link between the Aurignacian and Neolithic industries.

In some cases in Africa, even back in the Aurignacian time, the microliths furnish a large percentage of the total culture. In the region of Tebessa, Algeria, geometric flints make up 20 per cent of the worked flints. Several explanations have been advanced as to the particular purpose of these pygmy flints. Some think they were used for delicate work, such as scarifying or tattooing the human body; others think they were mounted in handles and used as saws or as weapons. Still others believe they were utilized in fine drilling and in the scraping of fine tools made of bone or wood. The crescentic forms may have been used as fish hooks, as they resemble the gorge hooks still used by some primitive people. In Africa they may be connected with the removal of snails from shells in regions where they were used for food.

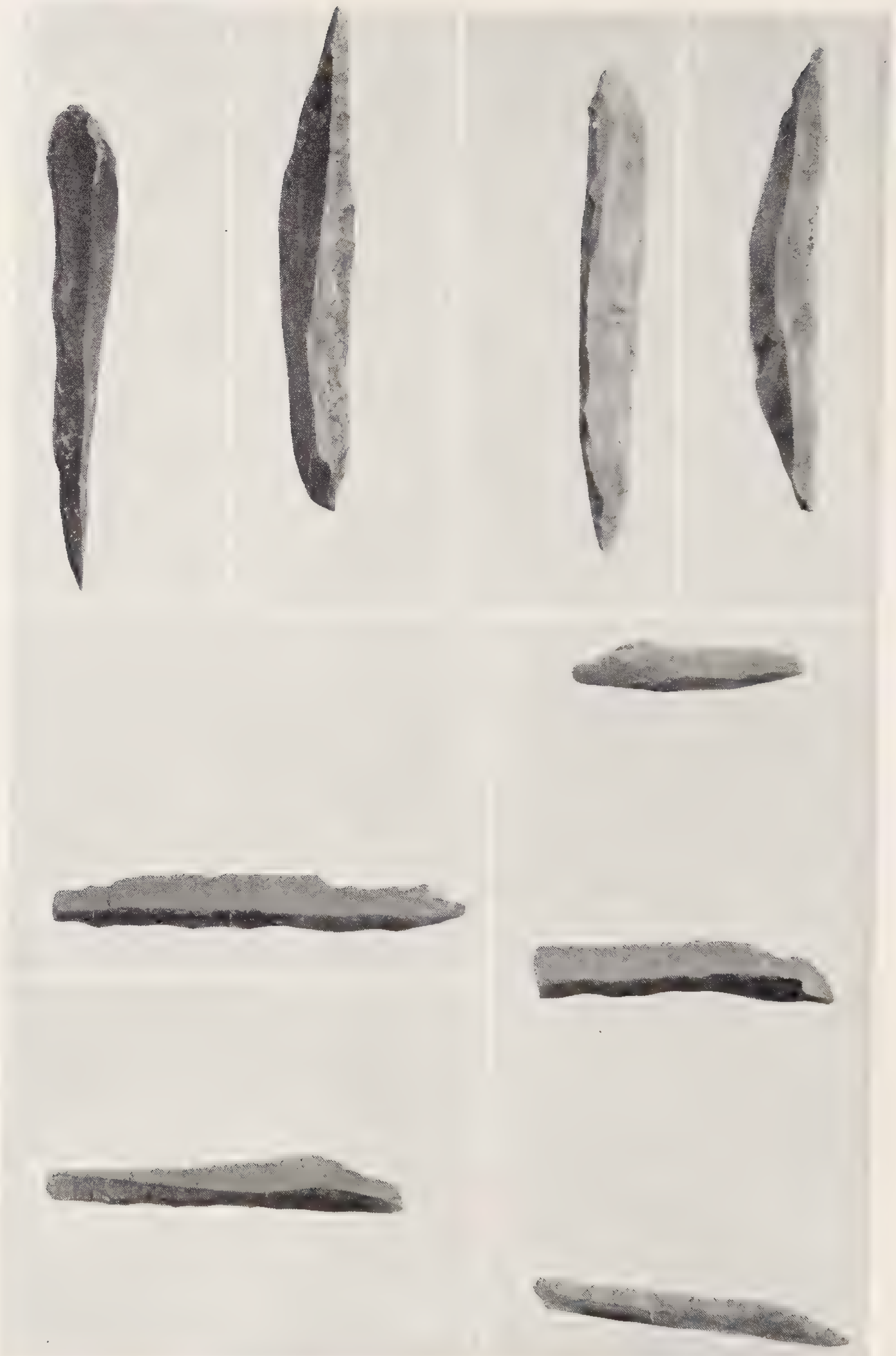
It is a notable fact that this peculiar microlithic industry is found all over the world and although originating in the Aurignacian period, it is not peculiar to it, but in fact is amplified and developed in the later Tardenoisian and the Neolithic. Microliths are such an important feature that a moment may be taken in considering their possible origin. The French archaeologist, Peyrony(1) has written quite fully on the evolution, or what seems to be the evolution, of certain Mousterian tools into types characteristic of the Upper Palaeolithic. It may be concluded from his studies that the microliths are the final result of a series of changes that start in the crude culture of the Mousterian where he finds certain unusual forms with a special retouch. Among these forms are truncated pieces, which seem to anticipate the truncated forms of the Aurignacian. In the Mousterian they are rare; they become more abundant and much smaller in the Aurignacian period while in the Upper Aurignacian they finally pass into the geometric forms already mentioned which seem to be the *Ultima Thule* of this type of flint work.

Points *(pointes)*. True points, those that might be termed arrow or spear heads, are not common in the Aurignacian period although they appear before its close. The people apparently were not warlike and relied upon other methods of killing game than stone tipped spear or arrows. Most of the utensils to which the French apply their term *"pointes"* may be better regarded as knives; an American archaeologist certainly would not regard them as points. There is a series of these blades peculiar to the Aurignacian in which there is a species of evolution. The earliest of these blades is the Audi blade found at the very beginning of the Aurignacian and regarded by many as a transition type between the Mousterian and the Aurignacian. The Audi type is made from a large éclat of the Mousterian kind with the back retouched so that it can be easily held in the hand. This is the beginning of that great series of Upper Palaeolithic blades which have the back chipped or blunted so that it will not cut the fingers when used. These blades, thus dulled on the back, are called by the French *lames a dos rabbatu*. There has been much discussion over the Audi blades, especially as to their origin. Were they primarily of Mousterian workmanship under Aurignacian influence or were they made by Aurignacians using Mousterian methods of treatment? The controversy has reached no

(1) M. Peyrony, Revue Anthropologie, July-September 1925.



Geometric Flints from numerous sites in Sahara Desert, Africa.



Upper Four—Gravette Blades from Abri Cellier. Lower Five—Microliths—Small Knives with Retouched Backs from Crozo de Gentillo (Lot) France.

definite conclusions except that the Audi blade seems to be the result of the interpenetration of two contrasting cultures. Which of these cultures had the major influence is uncertain in this particular case.

The next succeeding blade is the *Châtelperron* blade. This is definitely of Aurignacian workmanship and is clearly a development of the Audi blade. On the back is the characteristic retouch with its narrow parallel chipping instead of the coarser and more irregular hackly retouch of the Mousterian. These blades are smaller, finer and more shapely than the Audi type.

From the Châtelperron blade there arises gradually a third type, the *Gravette* blade, characteristic of the Upper Aurignacian. It is a good example of the improved technique that went on through the Aurignacian until toward its close. The Gravette point is quite narrow and straight so that the retouched back and edge are nearly parallel. In some instances, especially in the late Aurignacian, a tendency arises to remove the point thus forming a blunt end utensil.

What may be regarded as true arrow points, those with a tang and one or two shoulders, appear late in the Aurignacian. They are supposed to show Solutrean influence since that culture was fast approaching. The stems on these points are evidently for the purpose of hafting and they indicate the use of arrow shafts. When both shoulders are present the point is termed the Font Robert type.

SCRAPERS *(grattoirs or racloirs).* The scraper is a very common tool and had an early origin. It is found abundantly in the Mousterian and indeed in still earlier cultures. There are two great classes of scrapers; the end scraper *(grattoir)* and the side scraper *(racloir).* This classification is determined by the portion of the edge used for scraping purposes; whether it is on the end or the side. While the Aurignacian man received the scraper as a gift from the past he greatly improved and developed it, making it more efficient and useful.

Its chief use, doubtless, was in dressing skins, although it may have been used in shaping such materials as wood and bone. Of the different divisions of this implement the end scraper is the more common, especially the scraper at the end of the lame. This type was most serviceable because it had a long handle which afforded a better grip for the fingers. The side scraper varies greatly in thickness, ranging down to very thin blades which are indistinguishable from knives. Scrapers were frequently made from cores instead of blades and some would classify them on that basis.(1) Others would classify them according to their form or shape and in the following description of the scraper group this method will be followed.

One of the most abundant types of the scraper is the carinate or keeled scraper *(rostro-carinate)*, a form suggesting the carinate burin and named for a similar reason. This form is abundant in the Lower and Middle Aurignacian. In making this scraper a coarse, thick flake or even nucleus, having one flat surface was employed. At one end small flakes are thrown off in parallel or in radiating fashion to form a blunt tool. The retouch on this typical Aurignacian utensil stands in strong contrast to that of the Mousterian although it has prototypes in the earlier period and may be referred back either to the thick scrapers of that age or to the heavier and clumsier of the Mousterian points. On all of the earlier prototypes one finds the large, round deep scars so characteristic of Mousterian retouch with none of the fineness and regularity exhibited in the later work. If the Aurignacian did copy the old Mousterian forms he shaped them by means of an entirely new technique.

---

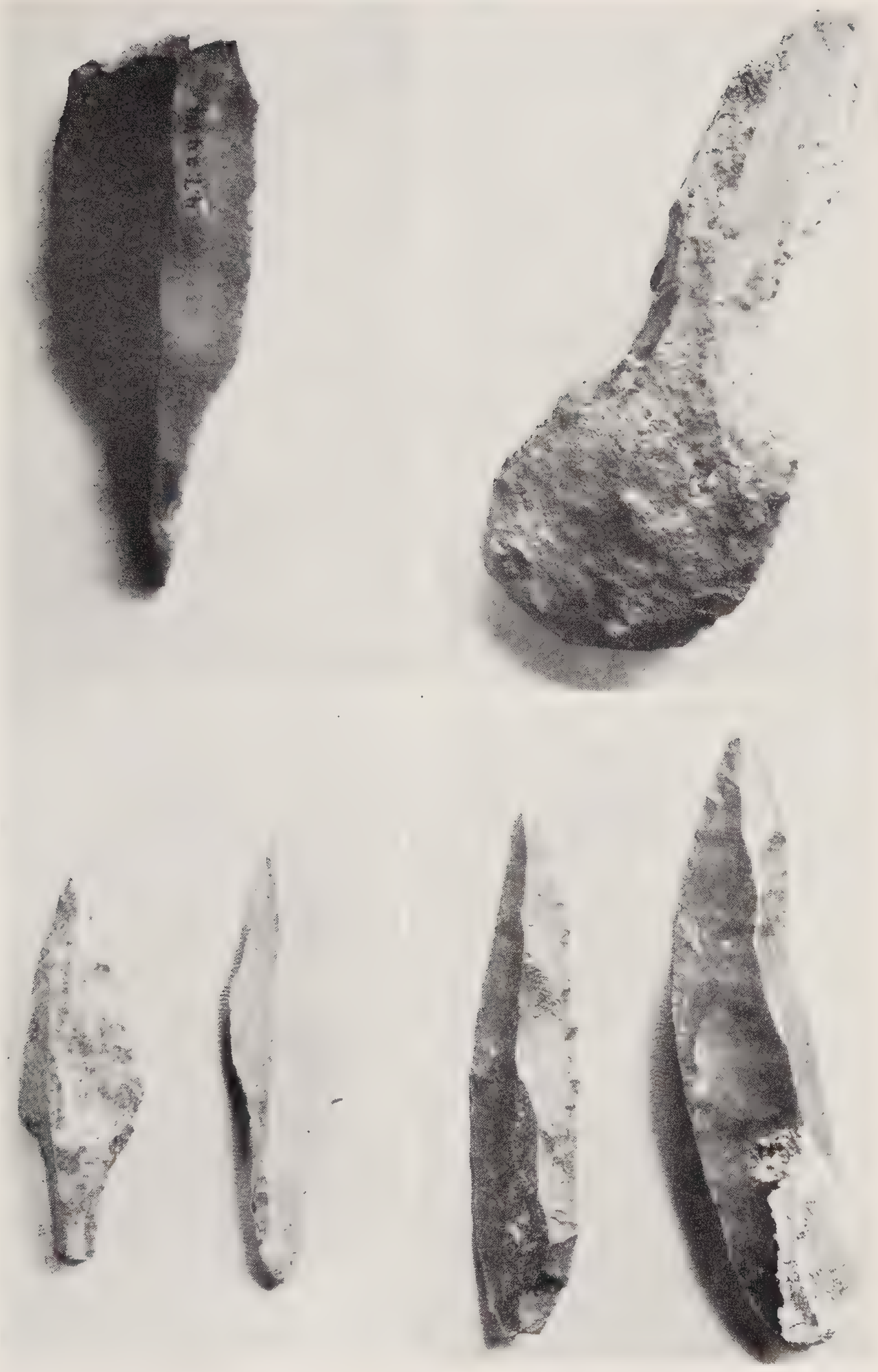
(1) L. Bardon J. et A Bouyssonie—Revue de L'Ecole d'Anthropologie, Nov. 1906. pp. 401-411.

In the earlier carinate scrapers the front is more or less semicircular and quite perpendicular. This is the Tarte type. Frequently a tendency arises to have one portion of the front project more than the others. This projection commonly has the best retouch and frequently shows no signs of wear while on either side, more commonly the left, there is evidence of use, frequently being nicked or broken to such an extent that a deep embayment results. This is the type called the muzzle *(museau)* scraper. The tendency to shorten the scraper and to trim it on all sides produces a pyramidal type which continues on into the Magdalenian and there grades off into the kindred form, known as the plane type *(rabot)*. This form is highly finished and bears a most careful retouch making a very symmetrical and attractive tool. It seems to represent the final development of the thick carinate scraper. On the other, the pyramidal scrapers tend to have less abrupt slopes than the carinates. As these slopes become gentler and less abrupt the scraper becomes flattened and passes into the ordinary round or oval form or into a particularly flat scraper with a markedly fine retouch *(grattoir à pointe mousse)*.

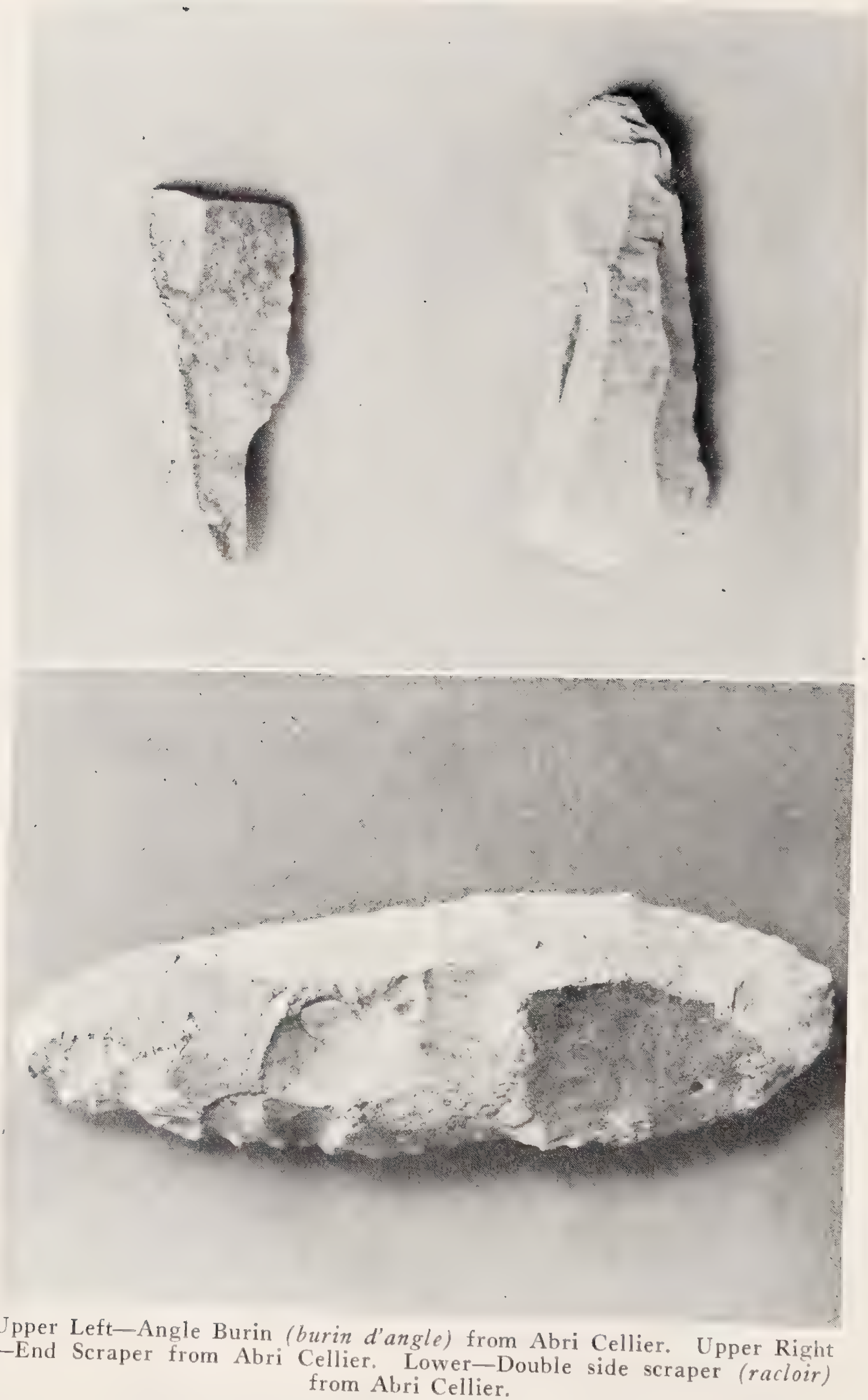
The carinate scraper also exhibits a tendency to become narrower and narrower and in so doing finally eventuates into the carinate burin. Any number of transitions between the two may be selected in a large series of specimens. The carinate idea thus appears to evolve into an ordinary flat scraper in one direction, into a burin in another, and into a pyramid in a third.

The carinate scrapers may be confounded easily with the nuclear type, but the latter is more particularly a Magdalenian form. These facts are mentioned as an example of the tendency of the carinate type to pass into various other forms, between which it is often difficult to draw lines of demarcation.

In many instances scrapers are double; that is, each end of a flake is made into a scraper to form the double end scraper. Each side may be retouched to make the double side scraper, or a side and end may be worked, forming the end-side scraper. Again, the flake may be trimmed all about its edges, forming scrapers which are named according to their shape; round, oval, rectangular, etc. Not infre-



Upper Left—Tap Borer, Abri Cellier. Upper Right—Strangulated Blade *(lame etranglée)*, Abri Cellier. Two Lower Left—Font Robert Points, Abri Cellier. Two Lower Right—Châtelperron Blades, Longueroche, Fr.



Upper Left—Angle Burin *(burin d'angle)* from Abri Cellier. Upper Right—End Scraper from Abri Cellier. Lower—Double side scraper *(racloir)* from Abri Cellier.

quently scraper and burin are combined in the same tool, a scraper being formed at one end of the flake and a burin at the other; this is the graver-scraper. It is impossible in a work of this kind to describe all of the numerous variations of the scraper that have appeared under the versatile touch of the Aurignacian hand, but some of the more important of these types have been mentioned.

SPOKE-SHAVE. This is a tool commonly formed from a lame by chipping out a more or less semicircular embayment. This tool had an abundant use among the Aurignacian bone workers as it enabled them to round off bone implements with a fair degree of ease.

TAP-BORER *(taraud)*. This is a coarsely pointed tool, generally of rough workmanship, but with characteristic Upper Palaeolithic retouch. It must have been used in drilling or in rimming out drilled holes.

TRUNCATED TOOLS *(pièce tronquée)*. These comprise fragments of lames broken off and retouched on the broken edge. They are often roughly rectangular in shape but pointed forms are also included. Capitan and Peyrony(1) have suggested that these fragmentary retouched pieces are in reality parts of broken knives. They found a number of these pieces in their excavation at La Ferrassie and in one case Peyrony was able to fit together three different fragments which formed a knife or poignard.

Long lames often break when thrown off from the nucleus and these broken pieces are utilized by retouching their ends. Often these truncated fragments are trimmed and retrimmed until they become so small that they can no longer be held in the fingers conveniently. The particular shape of the piece or the extra quality of the flint so appealed to the owner that he kept it as long as possible. Sometimes these broken pieces are quite regular in outline with one side broken off in such a way as to secure a keen, cutting edge, not unlike the edge of a cold chisel in appearance. The question arises are these rectangular pieces without retouch, made intentionally, or are they simply accidental? In view of the fact that large numbers of them have been found in certain localities it has been assumed that they were broken intentionally, to be worked up later into the truncated tools. This whole problem of what appear to be accidentally broken lames is of interest since in many cases they may be the result not of accident but of purpose and in this sense similar to the *burin de fortune,* already described. In other words, they may represent the raw material, purposely prepared, for further shaping as they were needed. The writer has often been impressed while excavating with the number of broken flint pieces in a given layer; they even outnumber retouched pieces at times. It is difficult not to accept the idea that they are in many instances the result of intentional breaking. The whole problem raised by these statements has

(1) Rapport Congres de Strasbourg, Juillet, 1920.

been fully and ably discussed by Bardon and the Abbés Bouyssonie.(1)

In closing the discussion on stone it is of interest to give a statement made by these same investigators of a record they kept of the relative numbers of pieces they found at the site of Noailles. A total of 1089 pieces were counted; of this number lames formed 41%; 17% unworked; although the latter may have been utilized; points 2%; grattoirs 22%; burins 31%; nuclei 1½%; miscellaneous 2½%.

BONE UTENSILS

Bone was largely utilized in the Aurignacian both for utensils and ornaments. It was used to some extent in the Mousterian but largely as anvils; bone tools as such first appear in the Aurignacian. In the category of bone, such material as horn, antler, ivory and teeth is also included.

The universal custom of breaking bone to obtain the enclosed marrow produced many splinters and crude pointed pieces which could serve for tools without further reworking. The effort to make something of these rude pieces and shape them into efficient tools was reserved for the Aurignacians.

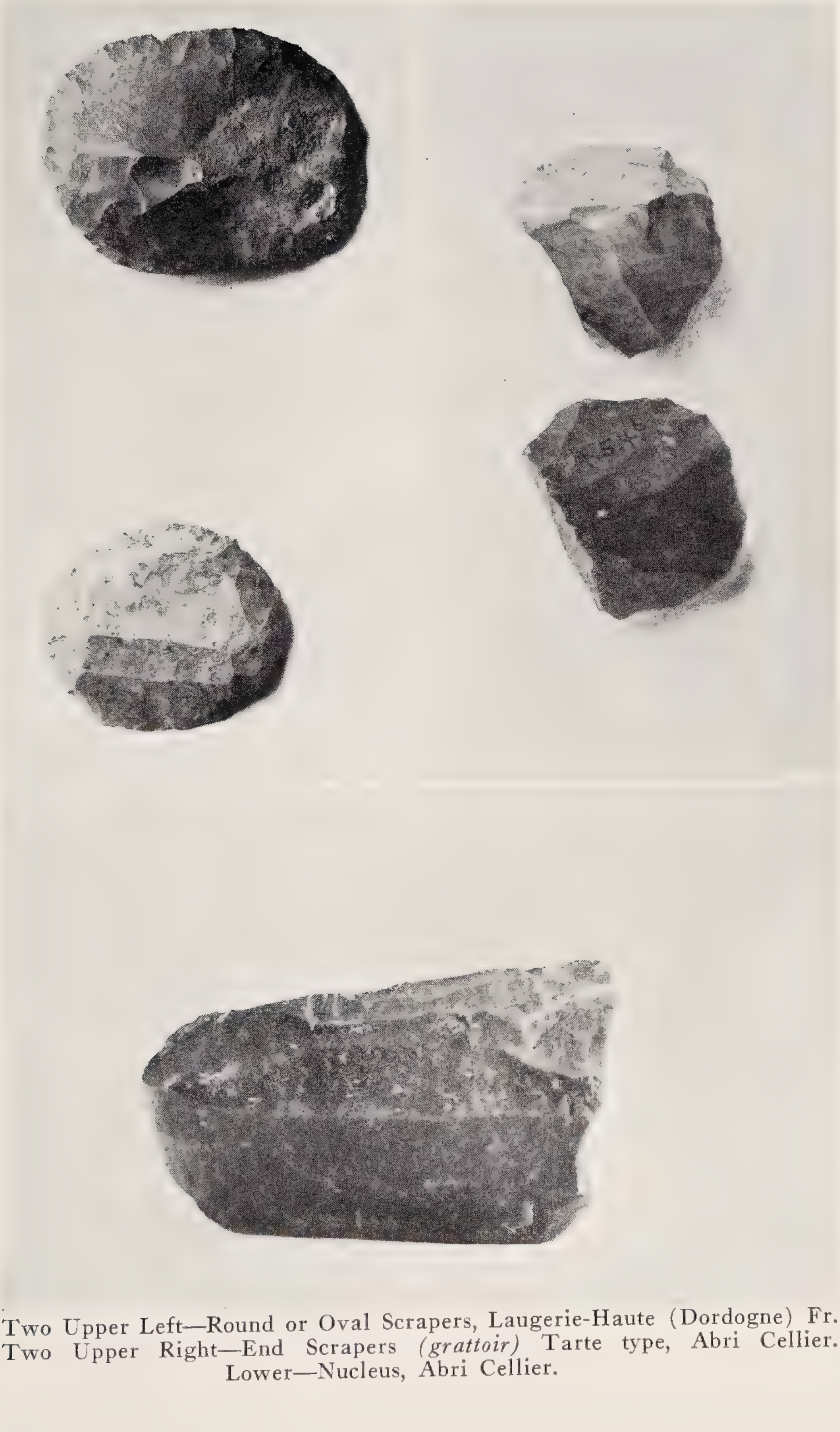
It is known that certain Aurignacian stations contain no worked bone; others, on the contrary, contain great numbers of implements, evidence that the bone industry was by no means universal. (2) On the whole, the bone culture of the Aurignacians is unique and differs decidedly from that of the Solutreans and Magdalenians. Occasionally at transition stations such as Solutré or Brassempouy the bone work at the base of the Soultrean is quite identical with that of the Aurignacian.

One of the notable features in connection with the bone culture in many stations is the large number of éclat or bone flakes that have been broken off or purposely struck off from the long bones of animals. These roughly simulate spatulae or often bone points. They were shaped into tools by percussion, by rubbing on sandstone or other abrasives and with flint scrapers and flakes.

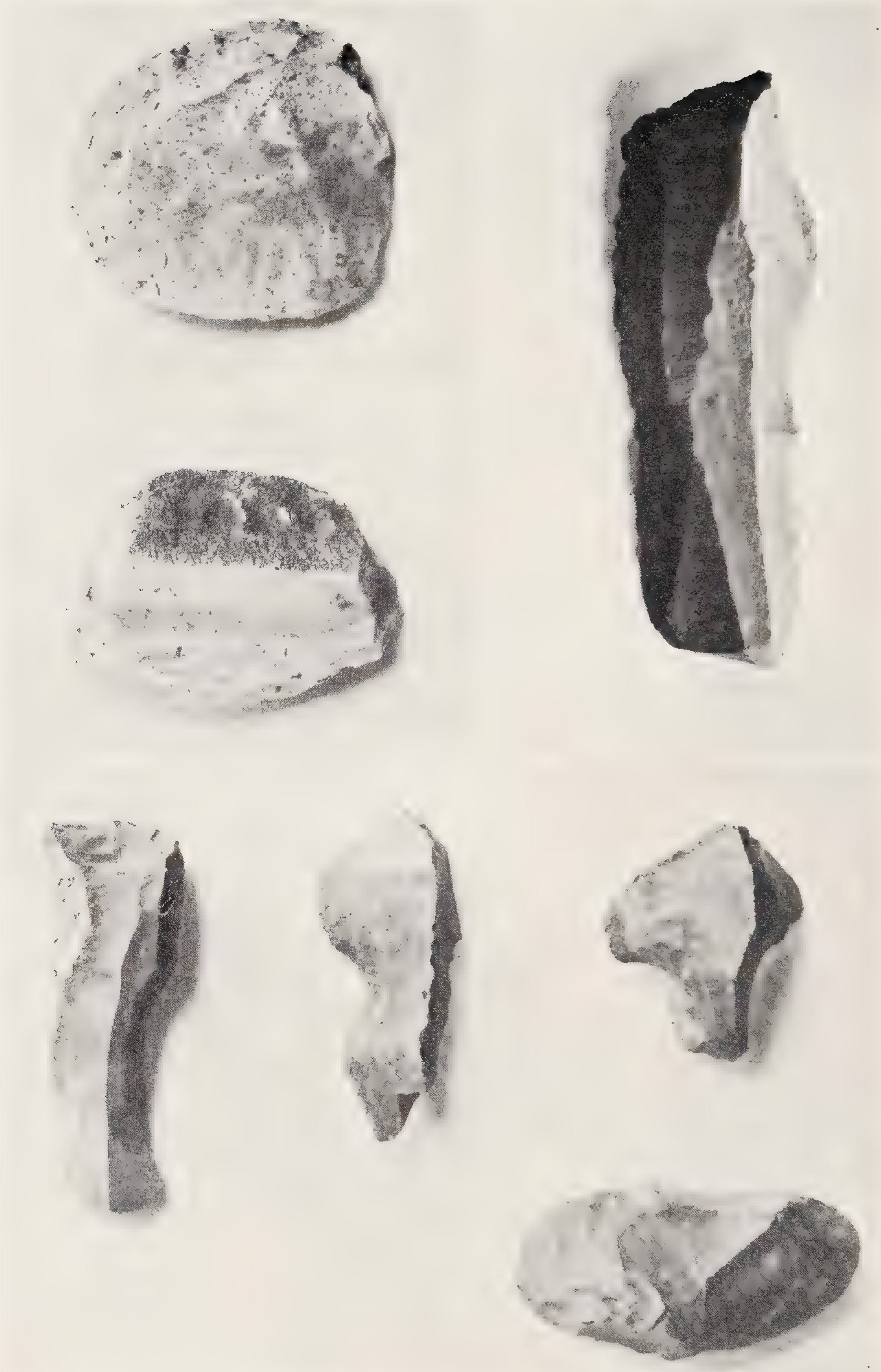
Splinters for fine awls and points were broken from bones by hammering or crushing. They were also removed by cutting deep grooves or channels on either side and splitting them out. The flint spokeshave was perhaps the most important of the tools used in shaping bone and especially in smoothing it. Quite commonly the original twist or sinuosity of the bone may be observed in the finished tool, the reshaping not being of sufficient thoroughness to remove all irregularities in the original bone. In making implements from the leg bones of animals and large birds it is common to leave a part of the epiphysis on the tool, thus forming a natural handle. Not infrequently these handles are ornamented with simple lines or designs.

(1) Revue de l'Ecole d'Anthropologie—Mai, 1906, pp. 170-175.

(2) H. Breuil, XIII Congres d'Anthropologie et Archeologie Prehistorique, Monaco, 1907.



Two Upper Left—Round or Oval Scrapers, Laugerie-Haute (Dordogne) Fr.
Two Upper Right—End Scrapers *(grattoir)* Tarte type, Abri Cellier.
Lower—Nucleus, Abri Cellier.



Two Upper Left—Round or Oval Scrapers, Sergeac, France. Upper Right—Truncated Blade, Combe-Capelle, France. Three Lower—Spokeshaves, Abri Cellier. Extreme Lower Right—Oval Scraper, Abri Cellier.

According to Breuil, there is not a great amount nor a great variety of engraved ornamentation on Aurignacian bone tools. Curved lines in parallel series or in separate groups and rows of dots in series are the principal types. More rarely linear patterns of somewhat complex arrangement are found. Chevrons fitted into each other, diagonal lines, looped lines, comb-like patterns all appear on certain of the bone utensils. These were very simple; the mere beginnings of the Aurignacian attempt at self expression.

PERFORATED ANTLERS.

The most striking of the bone tools are the perforated antlers, used probably as arrow shaft polishers. The hole generally oval in shape, shows much wear on opposite sides as if a solid had been drawn back and forth through it. Many regard these objects, and especially the decorated ones of the Magdalenian, as sceptres *(Baton du commandment)*. There is no denying the possibility of such use but the suggested purpose, namely the polishing of shafts, seems much more likely. These objects range in length from 3 to 10 inches. They are shaped, ordinarily not unlike a finger; one end and sometimes both ends are well rounded off.

SPATULAS. Another common utensil is the spatula, generally spoon-shaped, made from the leg bones of the bos or other large animals. They commonly have well shaped handles and reach a length of 7 or 8 inches.

POINTS. The characteristic bone spear point of the Aurignacian period is the split base type *(Pointe à base fendue)*. These are well shaped and carefully finished implements, varying in cross section from nearly circular types to flat ovate forms. These types all agree in having the base deeply notched, possibly for the insertion of a shaft. These points seem to be too delicate for rough usage in war or in the chase and it has been suggested that they are not spear points but had some other usage. Their shape certainly indicates that they were spear points; if not, their use is a mystery. In addition to the split-base types there are those with a solid base and also those in which both ends are brought to a point. These form the biconical spears or points.

BODKINS. Needles proper are rare in the Aurignacian although some have been reported, but fine bone points or bodkins occur. They are quite abundant in the *escargotière*(1) culture in North Africa and were used possibly as forks for removing snails from their shells.

Large bone awls are found widely and as they increase in size the term poniard or dagger is applied to them. These daggers are not common. The awls themselves are varied in type. Some have a large and somewhat square head; some irregular and unshaped heads, and some flat heads. The most abundant form is a plain cylinder, called by the French *hamecon (fishhook)* because it is believed they

(1) Shell heap.

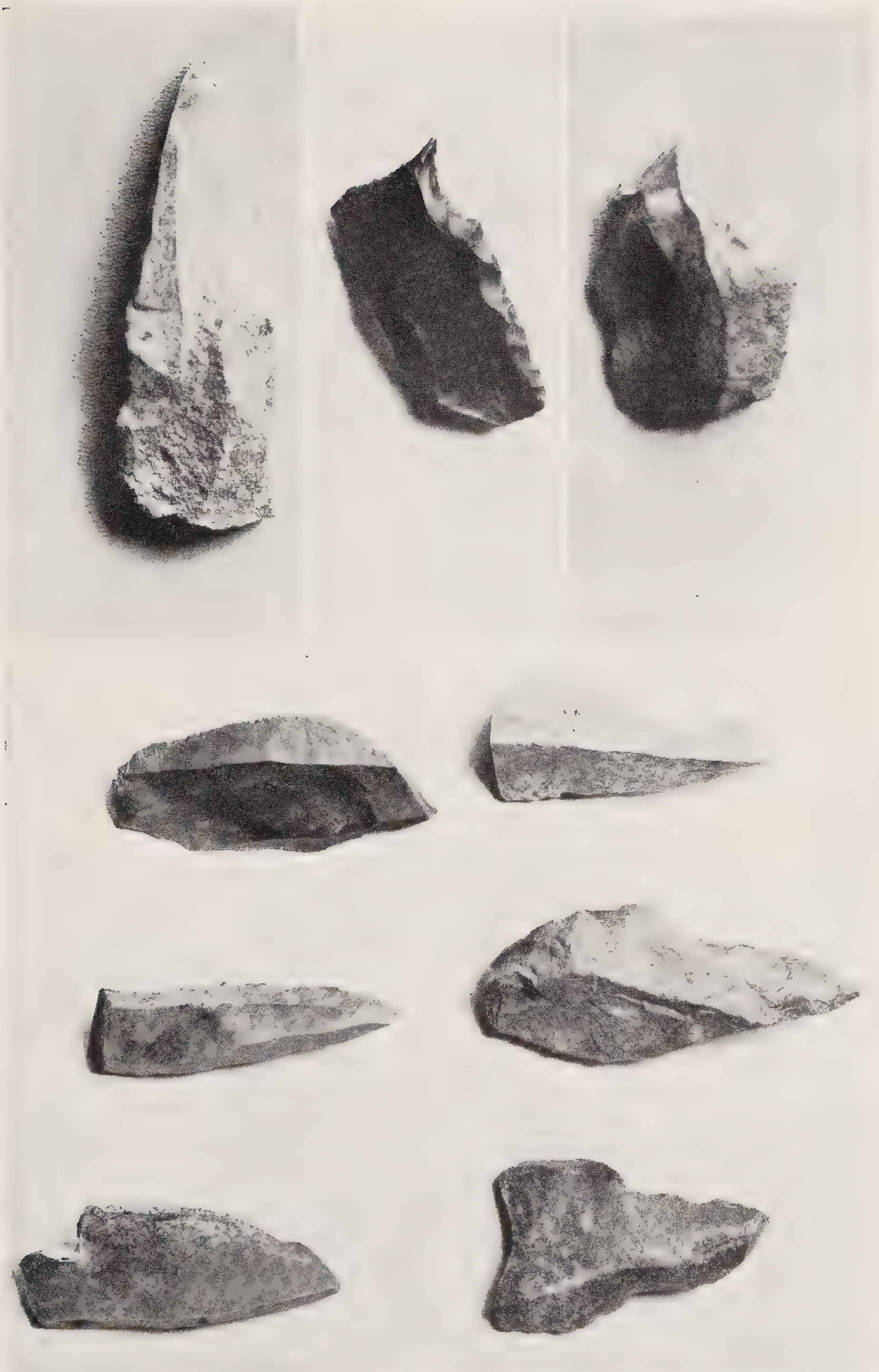
were used in fishing. These are the so-called gorge-hooks of the English.

Some of the tools allied to bodkins are coarser, often wedge-shaped and very often show signs of hard usage, the heads being battered or bruised as if by hammering. Other tools somewhat smaller with sharp edges are called chisels *(ciseaux)* although they may have been used as polishers *(glissoirs)*.

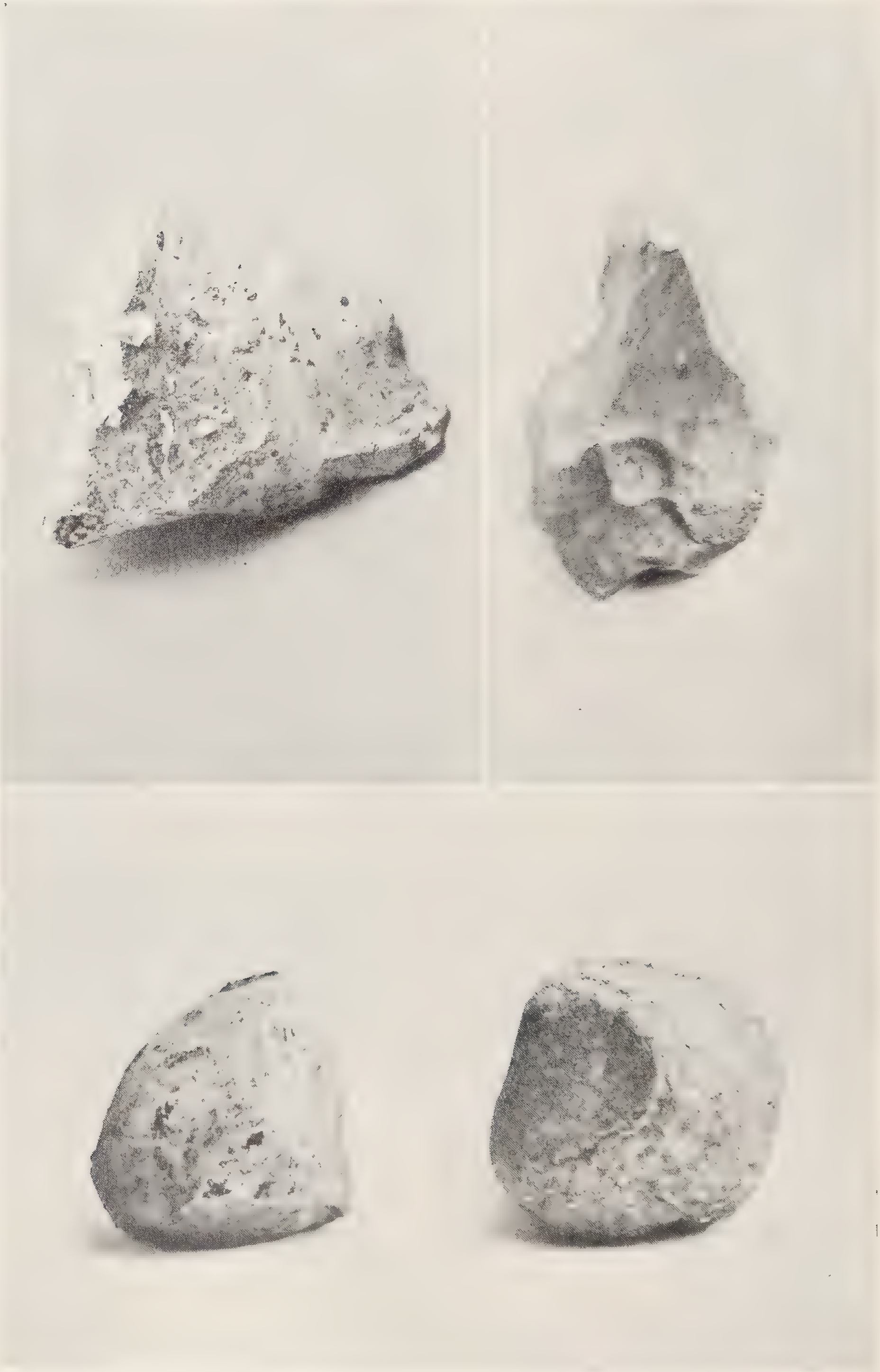
POLISHERS. Flat, smooth bones, made from the ribs or shoulder-blades of large animals, occur in fair abundance. Apparently they were used for smoothing skins or for a like purpose. They must have been used extensively as they show wear and are quite highly polished.

WHISTLES. Tarsal bones of the *bos* or bison are found in Aurignacian deposits with a neat hole drilled in the center. It has been suggested that they were used for whistles, although the writer has never been able to elicit any sound from them.

This completes a description of the more common bone utensils. The use of bone in ornamentation will be described under that heading.



Upper Left and Right—Simple Burins *(burin au bout de lame)* from Abri Cellier. Upper Middle—Stone Awl *(percoir)*, La Rochette (Dordogne) France. Lower Six—Flute Beak Burins *(bec de flute)*, Abri Cellier.



Upper Left—Flake from Abri Cellier. Upper Right—Pinched End Scraper *(grattoir à museau)* from Abri Cellier. Lower Left—Anvil *(enclume)* from Abri Cellier. Lower Right—Hammerstone from Le Moustier, France.

CHAPTER EIGHT.

THE HORIZONS OF THE AURIGNACIAN PEOPLE AND THE CULTURE

The study of Aurignacian man, if carried out carefully, involves a consideration of the geology of the deposits in which his remains are found and in which his implements occur.

Stratified deposits of Aurignacian age show three well defined horizons which contain utensils, separated by sterile layers of greater or lesser thickness. This indicates that after a period of occupancy a given site was abandoned for some time only to be reoccupied at a later date.

The three productive horizons are termed respectively the Lower, Middle, and Upper Aurignacian. In the lower horizon we find a culture quite extended and fairly homogeneous, indicating a somewhat rapid spread. It may be said to center in the Mediterranean basin with a subsidiary center in Southwestern France. This earlier culture is on the whole crude and it is modified and influenced greatly by the Mousterian ideas. There can be little doubt that the two cultures overlapped in time and that each was affected by the other.

It may not be inappropriate at this point to consider briefly this relationship.

In the Mousterian, the ancient "coup de poing" still held the field although it was being displaced rapidly by other utensils, especially the Mousterian triangular point of flint which served a variety of purposes, such as knives, scrapers, saws, lances and spear points. In some stations the transition from Mousterian to Aurignacian is very well shown. La Ferrassie is such a site. It was well excavated and clearly described by the French archaeologist, Peyrony. The culture recovered from such a station brings out well the profound change wrought in industry by the coming of the Aurignacians.

Work in bone, as already noted, made but a beginning at the close of the Mousterian epoch. With the advent of the Aurignacian, bone took on a new character and a tremendous extension. The old time "coup de poing," the almost universal tool of earlier man, disappeared from the Aurignacian layers and its place was taken by other types of tools and weapons not infrequently made of ivory, bone and antler. The Mousterian flint points are replaced in large measure by the

Aurignacian bone points. Flint points still remain but they are rare and seem to have no distinctive place in the life of the people.

It is of interest to note that such flint points as remain tend to retain the form and also the method of retouch characteristic of the Mousterian. This fact has been seized upon by some writers as indicating that Aurignacian man made no attempt to develop flint points and that he had no particular use for them, thus suggesting that he was not warlike. The weapons he had were those of the chase rather than those of war. This idea may have some foundation, for Aurignacian man was a most excellent worker in flint and the fact that he made no attempt to improve the flint point nor to manufacture it on a large scale may have such significance as has been intimated.

As we have seen, it is only toward the end of the Aurignacian age, when the Solutrean was coming on, that flint point manufacture seemed to revive and the work in bone points became decadent. Bone seemed to be a material better fitted for general purposes of the Aurignacians than flint, at least for weapons. Their flint tools and utensils are in large measure those which could be used in shaping bone rather than in having any special and primary end in themselves. The flint tools of the lower horizon are less well worked than those of the upper horizons but their workmanship is characteristic from the outset. The burin makes its first appearance in quantities here as does the unique carinate scraper.

In the middle horizons the keeled-scraper is the most characteristic tool found although there are many parrot-beak gravers. By this time practically all the known types of the burin have been invented and are found in the deposits. Here, too, the microlithic culture, the forerunner of the Neolithic period, begins on a large scale. The Gravette blade also makes its first appearance but was destined to be developed in the Upper Aurignacian. There is much decorative art found in this horizon, both in line and painting as well as sculpture and carving, often crude and amateurish as compared to the work of the later Magdalenian.

It has been noted that the Middle Aurignacian was the most favored time, both climatically and in the quality of the human beings who lived then. Industry reflects these conditions and it seems to reach its climax here in so far as the Aurignacian is concerned. The culture uncovered in these middle layers is so superior to that of the Lower Aurignacian that it does not seem to be so much an evolution from it as an abrupt mutation caused by the incoming of the Cro-Magnon peoples with their higher efficiency and mentality.

As the Upper Aurignacian drew near, the climate became colder;

industry diminished or at least lost its quality with the incoming of the Loess peoples. This loss of quality applies more particularly to flint implements which became also greatly reduced in numbers. The bone industry continued right on in full force or even increased through this time. The method of working bone and of ornamenting it seemed to improve; the workers became more skillful and some of their productions are comparable to those of the Magdalenian.

Taking all of the different horizons together the most striking artifacts revealed are the sculptures and bas-relief figures indicating as they do the dawn of esthetic, artistic and perhaps religious ideas. The Venus figures alone, carved from stone and ivory, would give distinction to those times even if no other forms of art or industry had appeared.

Following the brief statement of the horizons of the Aurignacians and their contained culture, a more detailed account will be given regarding the stratigraphy, especially noting the reasons why a certain bed is chosen as representing the beginnings of the Aurignacian, while another higher up is taken as the final stage.

Perhaps no one has studied these geological features more thoughtfully and carefully than the French archaeologist, Captain Bourlon.(1) This account is a brief summary of his views. He probably expresses as well as anyone the common French opinion on the limits of the Aurignacian culture as it exists in Southwestern France.

The base of the Aurignacian age is placed at the second level of the series of beds at Le Moustier, in that horizon where the oldest Châtelperron culture is represented and where the Châtelperron blade becomes a prominent feature of the total industry.

The reasons for selecting this particular horizon are that here out of 300 artifacts removed from this particular bed only 60 were typically of the Mousterian type. At the same time flints which were not at all Mousterian were encountered, such as well finished burins, carinate scrapers and notched blades. All of these belonged to another culture evidently and indicate both in numbers and workmanship that this new culture was under good headway and had become predominant. Bourlon found that this culture was very similar to that from the type station at Aurignac and hence called Aurignacian. He felt justified not only in naming it such but in placing its true beginnings at the second level of Le Moustier. All corresponding levels throughout Southwestern France are now accepted as the actual beginning of this age.

The upper limits of the Aurignacian are fixed as follows: This limit is placed at the horizon where the Font Robert type of point begins to be found in numbers. However, there is a difference of opinion among archaeologists as to whether the Gravette blade or the Font Robert point should be used as an indication that the final stage of the Aurignacian has been reached. Bourlon has taken the view that not only the Gravette blade horizon, but the higher Font Robert horizon as well should be included in the Aurignacian. This decision was reached for the reason that the great bulk of the culture at this level is Aurignacian rather than Solutrean. In one case the Font Robert horizon yielded Bourlon an assemblage of 2487 pieces. Of these, but 86 had the long flat retouch of the Solutrean, while 227 were definitely Aurignacian with its more abrupt retouch. Although the Solutrean influence were evidently coming on, yet the culture of the Aurignacian was still predominant and that should settle the question so far as this horizon is concerned in favor of its Aurignacian character.

---

(1) Revue Anthropologique, July-Aug. 1913.

Captain Bourlon was killed in battle while leading his chasseurs into action. His death is a tragic example of the distressing destruction of genius and ability in the course of the late war.

Above the Font Robert level the Solutrean becomes the predominating influence. Bourlon also fortifies his decision by citing the fact that stemmed points of the Font Robert character are found in other well established Aurignacian levels such as those of La Ferrassie and Laussel. Their presence in such horizons is taken as an indication that the manufacture of stemmed points had become prevalent in the Aurignacian at various centers in France. This stemmed point commonly, if not invariably, accompanies the Gravette blade. The two seem to belong together and to be of the same culture. The Font Robert point has been regarded very generally as Solutrean but for the reasons stated, Bourlon classifies it as Aurignacian, at least in origin, and places it at the very close of that age.

Within these limitations mentioned we find Aurignacian man, his skeletal remains and his culture—the limits of his earthly career.

The Lower Aurignacian bed,—the Châtelperron horizon—occurs at the following stations, among others: Châtelperron, La Ferraise, Germolles, La Roche-au-Loup, Gargas, Haurets, Pair-non-Pair, Audi, Le Moustier *(foyer* No. 2). At two of these stations, namely Audi and Le Moustier, the Mousterian retouch persists longer than it does at the other sites named. Why it should be so cannot now be explained, except that the Mousterians dwelt there longer for some reason than they did elsewhere.

The Middle Aurignacian bed,—the "Type d'Aurignac" horizon—as it is called by the French, is found at the following well known sites, among others: Aurignac, Tarte, Les Cottés, Les Roches, Gorge d'Enfer, La Ferrassie (bed of the large abri) Boviton, Laussel, Le Ruth, Spy.

The Upper Aurignacian bed—the Gravette point horizon—occurs typically at the following: La Gravette, La Ferrassie (bed 8 of the large shelter), Laussel, Masnaigre (level D), Noailles, La Coste, Spy (higher level), Font-Robert, Masnaigre (level B). The rather abundant presence of Solutrean retouch and of the Font Robert point in the three stations last mentioned places them in a somewhat different category and in a rather doubtful position, but most investigators would include them in the Aurignacian. It will be noted that some of the stations noted have all three horizons of the Aurignacian while others have but one or two.

The following table sets forth a resumé of the facts brought out in this chapter.

Lower Aurignacian— Châtelperron blade horizon	1. Audi and Le Moustier, No. 2 facies —Mousterian retouch notable.
	2. Châtelperron facies — Aurignacian retouch predominates.
Middle Aurignacian— Aurignacian point horizon	1. Aurignac and lower Boviton facies —Strangulated blades and keeled scrapers with fan-like retouch prominent.
	2. Cro-Magnon and Upper Boviton facies—Busqué burins distinctive.
Upper Aurignacian— Gravette point horizon	1. Gravette facies—Gravette blade is the most marked feature.
	2. Font Robert facies — The Font Robert point the outstanding artifact. Aurignacian and Solutrean retouch both present but associated chiefly with typical Aurignacian utensils and workmanship.

In connection with this account of the stratification of the Aurignacian and of the story which it tells, it is well to note that the recognition of a distinct Aurignacian age by archaeologists is comparatively recent and that quite a long drawn out and somewhat bitter controversy arose before it was finally delimited and recognized as an age by itself. The prominent archaeologist de Mortillet, who in his day wielded great influence upon French archaeology, had classified it as a part of the Solutrean. Piette, also eminent as an archaeologist, had recognized its separate and distinctive character but had given it the name, Eburneen. Credit for the establishment of this age should be given chiefly to the archaeologist, Abbé H. Breuil.

Breuil wrote a series of papers(1) which were noteworthy in establishing the claim for separate recognition of the Aurignacian.

---

(1) Among these papers are the following:
La Question Aurignacienne—Revue Prehistorique, 1907.
L'Aurignacien Presolutreen—Revue Prehistorique, 1909.
Les Gisements Presolutreen du Type d' Aurignac—C. R. du Congres d' Anthropologie, Pr. de Monaco, pp. 323-350.

The basis for this lay in the fact that the fauna in this particular horizon was different, often profoundly so, from the horizons above and below it even in the same region. He noted that in Southwestern France, below what had come to be recognized as the Solutrean horizon, there was a varied assemblage of faunas such as the mammoth, horse, cave bear, hyena, etc. In higher horizons this more varied ensemble gives way to the predominance of one type, the reindeer. The other mammals mentioned are present but the reindeer predominates, hence there is a decided change in fauna.

On the other hand the fauna of the underlying Mousterian is decidedly a cold fauna while the horizon above it held a steppe fauna.

These contrasts in fauna were a large factor in calling for a delimiting of the Aurignacian from the horizons above and below. In addition to the faunal differences, Breuil was able to cite many instances in which the artifacts of this horizon were very different from those above or below. He presented strong evidence of this from eight chosen stations: Trou Magrite, Goyet, Spy, Solutré, Brassempouy, Pair-non-Pair, Arcy-sur-Cure and La Ferrassie. Commenting on these sites he says, one can see from these eight stations which have been explored with care, that there are horizons in them containing worked bone, ivory and flints showing advanced Mousterian treatment commingled with implements characteristic of the Upper Palaeolithic. All of these exist however in Pre-Solutrean levels. Reasoning from these conditions there seemed to be no other conclusion than that a new period of time ought to be recognized between the Mousterian and the Solutrean. In spite of much opposition and difference of opinion the idea was finally adopted and the newly recognized age was called Aurignacian after the typical culture at Aurignac.

The question naturally arises: Do all of the stations containing the Aurignacian, as here defined, have great sameness of culture, or are there marked differences between different stations? In general it may be replied that the different sites have much in common, but also some differences. Some stations seem to have a monopoly on certain artifacts; the differences, however, never counterbalance the resemblances. For example, the keeled scrapers are numerous at Tarte, Haute Garonne and at Germolles, Saone et Loire, but they are wanting at Gargas, Haute Pyrenees. They are present but not abundant at Tilly and Solutré, Saone et Loire, wanting at Châtelperron, Allier, but very numerous at Le Ruth, Dordogne. The Mousterian influence is well represented in some stations, but there is a great difference in its relative proportions in different areas. For example, the Mousterian culture is abundant at Solutré, Gargas, Germolles but in most sites it is either wanting or feebly represented.

In order to bring out more fully the resemblances and contrasts between different areas, a description of the Aurignacian culture from three widely separated countries will now be given. In this way greater detail can be set forth although no complete descriptions can be given in a work of this kind. The three regions selected are Morovia in Czechoslovakia, the Department of the Dordogne in France and the province of Constantine in Algeria.

MORAVIA

Science owes much to the work of Dr. Karl Absolon as well as earlier workers in making known the Aurignacian culture of Moravia and it was under his guidance that the writer visited some of the classical Palaeolithic stations of that country. The culture there is very similar to that of the Aurignacian in France, but whether the two are contemporaneous or not is as yet undetermined. Geologists are not agreed by any means on the age of the loess in which the Aurignacian culture of Moravia is found. The work in bone is more advanced and more varied than that found in France and bone is used more extensively for tools. Several beautiful examples of the so-called Venus figures, carved in ivory, have been discovered. They are more delicate and graceful than the figures of like import found further west.

In Moravia there is a wealth of burins of every conceivable type indicating, as generally interpreted, that the working and engraving of bone was a very important item in the local industry. On the whole the flint culture is better than that in France. There is a neatness and trimness about the work which is outstanding. It may be, however, that the apparent superiority of the flint work in such stations as those of Wisternitz is due more largely to the fine quality of the stone found in the region than to better technique of working. The Aurignacians had the best of material to deal with in this portion of Europe.

It has been well said that outside of Spain and France no country in Europe is more important for the study of Palaeolithic man than Moravia. The culture is quite as complex as anywhere else, harking back as it does to an earlier Palaeolithic industry of a puzzling and unsolved type. Out of this crude and unpromising condition has grown the rich flower of the Moravian Aurignacian. There is a decidedly forward look in this culture which anticipates the later Palaeolithic. This is shown by the complex retouch on the flint, often of a double nature; that is, a large chip is thrown off and then within the large scar a fine retouch is made later. The flint pieces are more thoroughly worked than is common elsewhere. There is more chipping on a given piece than is customary; the worker not being content to trim just one small portion of a flake but tended to prepare all parts of it for use, thus utilizing more thoroughly a given piece than was apt to be the case with the more western Aurignacians. Blades found at Pekarna are good examples of this thorough and careful treatment. Occasionally the blades are serrate, beautiful for the depth and evenness of the retouch. The microlithic industry is a feature in Moravia which often exhibits this serrate retouch combined with great beauty of design and finish. The flint awls are another interesting and well finished feature in the culture. They are not only well shaped and proportioned, but have a notable fineness and delicacy in their finish. Another aspect of the culture is the abundance of intermediate grades between different types of tools, especially of the burin. Possibilities are afforded for tracing the evolution of tools from one type to the other and valuable series illustrating such steps are to be seen in the Museum at Brno.

Ivory holds a place of exceptional importance among the materials used by Palaeolithic man in Moravia, as pointed out by Breuil in an interesting article.(1) The cylindrical spear points, long and curved, are especially numerous, often slightly decorated with transverse or oblique lines. Other objects in ivory suggest the bag handles of the modern Eskimo. Frequently the ends of mammoth tusks are cut off, making cone-like objects, frequently ornamented, which were used for some unknown purpose. The tusks themselves, although having no known use, are often ornamented with rather schematic figures among which are some that seem to represent the human form.

In similar ways the ribs of the mammoth bear ornamentation chiefly of incised lines but in a variety of designs. The metacarpal bones of this mammal are sometimes shaped into statuettes which strongly suggest the human figure.(2) The bones and antlers of the reindeer and the bone of other mammals are utilized for various purposes, such as poignards and spear points. Some of the points have depressions cut into the edge, evidently for mounting microliths. Bone clubs, often ornamented with conventional lines, form an intensely interesting feature of the culture. They are shaped generally from the bones of the mammoth.

---

(1) Voyage Palaeolithique en Europe Centrale—L'Anthropologie, tome 34, No. 6, 1925. pp. 515-552.

(2) The extent to which the bones of the mammoth are employed is very noticeable in Moravia.

Bone celts abound, many of which bear evidences of hafting. Likewise, large pieces of mammoth tusks are found which served as nuclei and from which chips and flakes of ivory have been cut off for various purposes as pendants and other ornaments.

As in many other European stations there was an abundant use of color; white, red, brown and black. In one case a stone mortar for color grinding was found and in another locality a mortar with a bone pestle intended for the same purpose.

Aurignacian peoples in various locations had the custom of throwing all of their food refuse into heaps, or at least forming large pits of such material. One of the most notable of these middens on record is the mastodon bone pit near Wisternitz, Moravia. These bones represent the remains left from the roast mammoth feasts of those by-gone days. The middens are composed almost entirely of mammoth remains although a few bones of other animals such as the rhinoceros, wolf, lion and fox are found.

The Wisternitz midden is located on the loess slope of a high butte, the Hill of Wisternitz. Soundings on the flanks of this great eminence show that remains of archaeological importance occur in the loess for a distance of at least 3½ miles in the same horizon as that which contains the midden. Doubtless many others will be revealed with further investigation. In preparing for a great feast the Aurignacians leveled a large flat area, in the loess, for a fireplace. Here they brought dismembered portions of the mammoth and roasted them. In the ashes and other refuse we find the great tusks thrown confusedly in with tibias and other leg bones, jaws and calcined fragments of other portions of the body. It is clear that the animals were not killed on the spot but were brought there piecemeal, for certain portions of the body are almost invariably wanting, vertebrae and skull bones for instance. The great tusks were brought in not because they had any food value but because the ivory was useful for making tools and ornaments.

Even in this brief statement regarding the Aurignacian archaeology of Moravia it can be seen that the mammoth held a leading place in the life of the people. These animals must have been very abundant and the culture in bone and ivory was bound to have first place. While the people did use antlers and the bones of other animals, they were subsidiary. Immense numbers of flint utensils, too, are found; they seem to be much more abundant here than in Western European regions of like extent. In some instances Solutrean influence, similar to that acting in Western Europe, is found toward the close of the Aurignacian. Inasmuch as an early type of Solutrean has been discovered in Hungary, it has been suggested by Breuil that this influence came from that direction.

DEPARTMENT OF THE DORDOGNE, FRANCE

Turning to a typical Aurignacian area in France, the Dordogne would be naturally selected as a type region and a description of a few sites in that department will suffice to indicate the general conditions in France.

The Logan Museum site, the Abri Cellier, near Le Moustier, is chosen to illustrate the materials, artifacts and different utensils of the period.

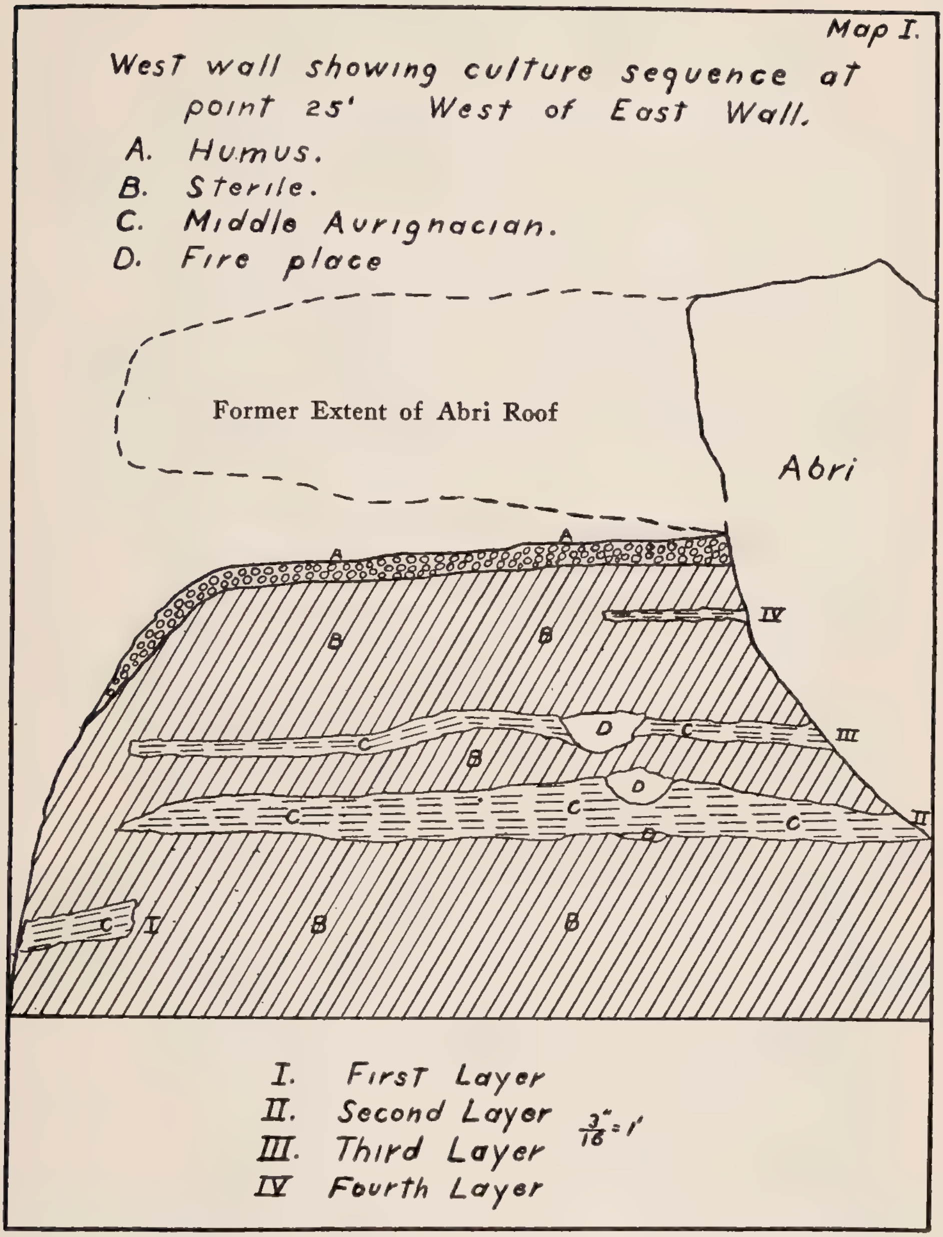
The Logan Museum secured the right to excavate the Abri Cellier site from the French Government and all the material taken from the abri with minor exceptions is in the possession of the Museum.

The site is two hundred yards east of the well known Le Ruth shelter and one kilometre northwest of the classical Mousterian site at Le Moustier.

The excavations have revealed 4 different levels all of them belonging to the Middle Aurignacian.

Before finishing the 1927 excavations a test pit was sunk to a depth of 12 feet below the floor of the present abri. This revealed a lower layer of Aurignacian culture and also another abri. It was too late in the season to excavate this new find but it would in all probability uncover earlier culture levels, probably Mousterian and Lower Aurignacian judging from occurrences in the immediate vicinity.

The Abri Cellier is a large one extending, as test pits show, at least 100 meters east and west. In Aurignacian times the abri roof extended out 30 to 40 feet further than it does at present furnishing a splendid shelter for the people of that day. The roof gave way, not all at once, but at intervals as the deposits below indicate and these occasional rock falls were a potent influence in causing a temporary abandonment of the abri, the people not returning until equilibrium had been established and danger from falling rocks had passed for the time being. These alternating periods of rock fall



Section of Abri Cellier site at Le Ruth, France. Leased by Logan Museum.

and rock stability account for the four levels of culture represented, separated by sterile layers representing periods of non occupancy caused probably by the instability of the roof and its tendency to collapse.

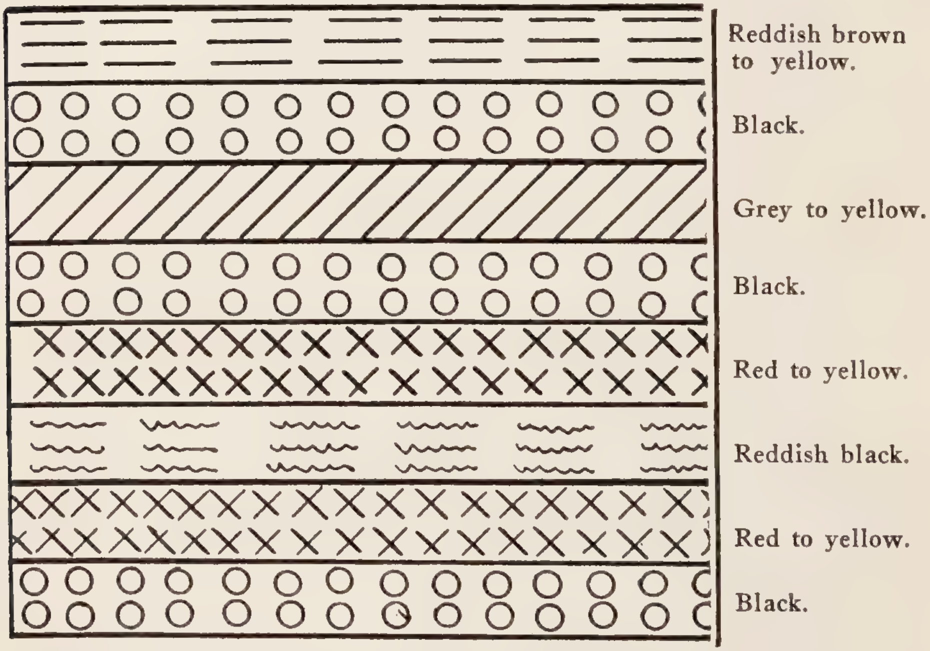
In carrying on investigations in such abri with scientific accuracy it is necessary to have some definitely fixed lines or points from which measurements may be taken and by means of which important finds may be correctly located with reference to each other.

The original east wall of the first trench was taken as the datum plane for measurements east and west. The rear wall of the abri which had a fairly straight east and west direction was used as the basis for measurements to the southward toward the front of the abri, while the junction of the debris slope with the rear wall was used as the zero point in vertical measurements. The temporary working floor of the abri was fixed at the base of layer No. 2; this was ten feet below the junction of the debris slope and the abri wall.

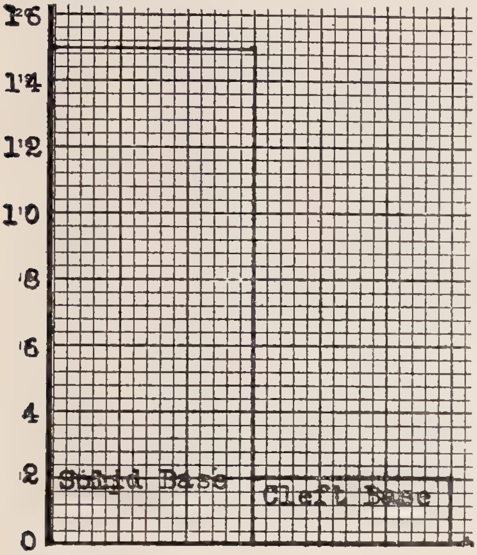
Cuts show a generalized section exhibiting the cultural sequence, a ground plan or floor of the abri and a section showing in detail the stratification of cultural layer No. 2.

In Map No. 1 the humus layer extends to a depth of 8 or 10 inches, then follows a sterile deposit of sand, clay or limestone blocks, most of it coming from the former roof of the abri. The thickness of this layer varies from 5 to 6 feet.

In the rear of the abri there occurs in the middle of this sterile deposit a thin cultural layer. At most it is but a few inches thick and generally it is but a film. In it are found a few artifacts and

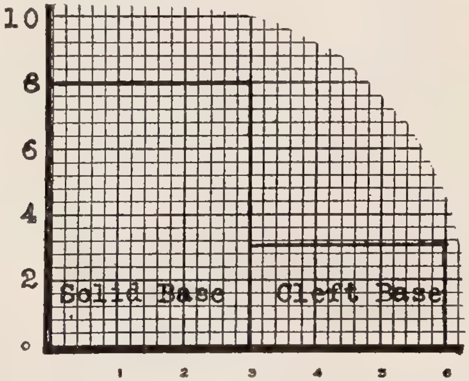


LOWER LEVEL OF MIDDLE AURIGNACIAN. DETAIL FROM MAP I. LE RUTH SITE 1927. CUT NO. 2



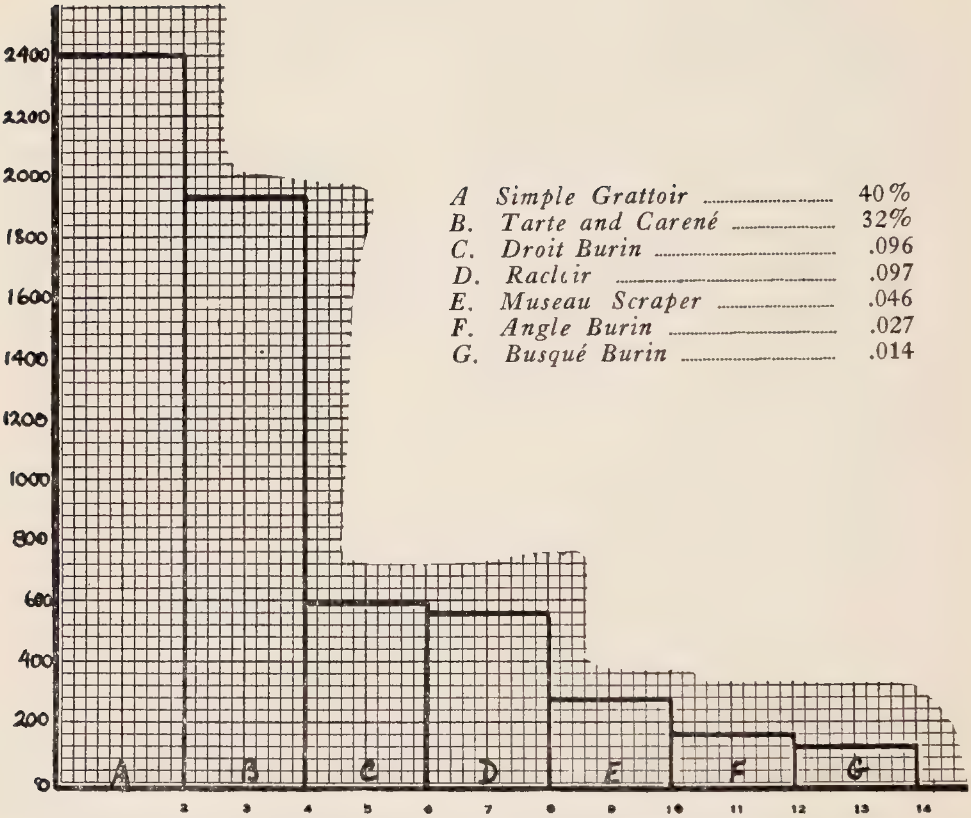
QUANTITATIVE RELATIONSHIP BETWEEN SOLID BASE POINT AND CLEFT BASE POINT IN UPPER HALF OF DEPOSIT I. (39′-50′ W. of East Wall)

flakes, the former chiefly thick scrapers of the Tarte type which indicate its Middle Aurignacian age. This is cultural layer IV The paucity of remains, the thin character of the deposit point to a brief occupancy by the Aurignacians who made it.



RELATIONSHIP EXISTING IN LOWER HALF OF DEPOSIT I.

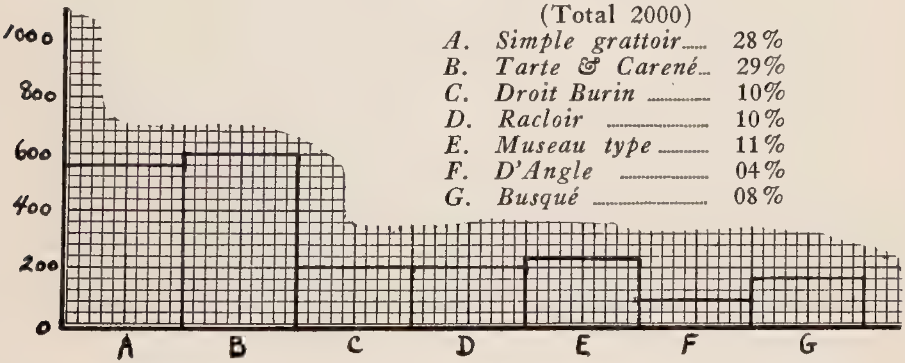
Below the sterile layer in which IV is found culture deposit III occurs. This layer varies in thickness from 4 to 13 inches. It is thickest near the back wall of the abri and ceases abruptly about 30 feet to the front. This deposit is relatively poor in artifacts except at the very rear near the back wall where numerous Tarte scrapers were found. Faunal remains are common in it as are fire places. The fauna is chiefly the horse, bovidae, reindeer, wolf and bear. Immediately above this layer at the very base of the sterile layer a few artifacts were found and some faunal remains.



TYPES AND QUALITY OF ARTIFACTS FOUND IN LOWER LAYER OF MID-AURIG. LE RUTH SITE (Dordogne) 1927 (Total 6000)

These are probably due to temporary occupancy by wandering groups who made no long stay on account of the uncertain condition of the roof.

Below layer III. is another sterile layer measuring from 2 feet 5 inches in thickness to one foot. As in the upper sterile layer occasional faunal remains and artifacts are found in it especially at the top and bottom. Below this layer is cultural layer No. II, by far the most important layer of the site both in thickness and in number of artifacts recovered from it. It varies from 2 feet to 4 inches in thickness; its thickest portion is in the rear of the abri about 10 feet from the back wall. The layer is generally quite laminated showing 7 or 8 thin strata, possibly indicating different occupations of the site. The varying colors are chiefly due to the greater or less use of fire, the amount of ash or cinders and charred bones or the amount of oxidation. There is apparently little or no difference in the culture from top to bottom. Although the finest specimens found come from the bottom section, which was blackened by extensive use of fire and by carbonized remains of bones. In this layer the use of fire was quite general throughout the portion of the abri excavated, whereas in upper layers the use of fire is quite generally restricted to fire places in definite locations. Cut No. 2 gives an idea of the succession of laminae in this layer. The common types of artifacts found are end scrapers, side scrapers, and burins of various forms and awls. Out of a total of 6000 pieces which were counted 40% were simple grattoirs or end scrapers, 32% Tarte and keeled or carinate scrapers, 4% were museau forms or muzzle scrapers, 9.7% were racloirs or side scrapers, 10% were simple burins, 2.7% angle burins, 1.4% busqué burins, while the small balance consisted of percoirs and unusual forms. In addition to the flint an important bone culture was found in layer II while worked bone was almost entirely wanting in layer III. Pendants, spatulae, glissoirs or polishers, and spear points were found in fair abundance, some of them marked with simple straight lines for ornamentation. The cleft base spear head occurred all through this layer but was more abundant toward the bottom; the solid base forms, while they occurred throughout the layer, were more abundant in the upper portion.

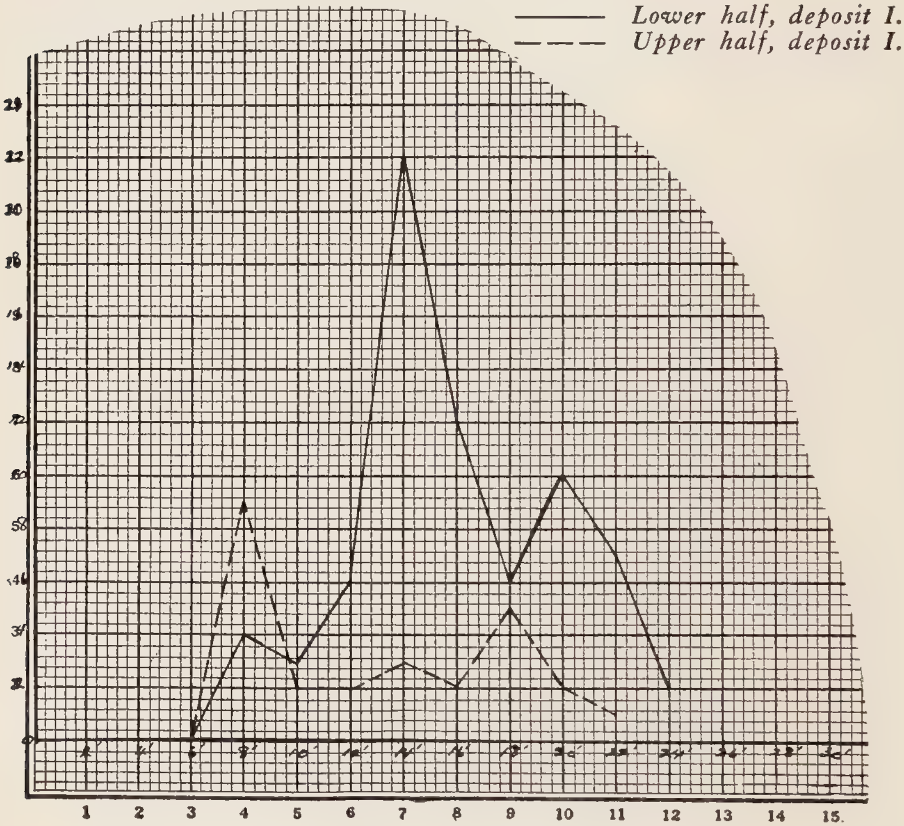


TYPES AND QUANTITY OF ARTIFACTS FOUND IN UPPER LAYER OF MID-AURIG.
Le Ruth Site 1927.

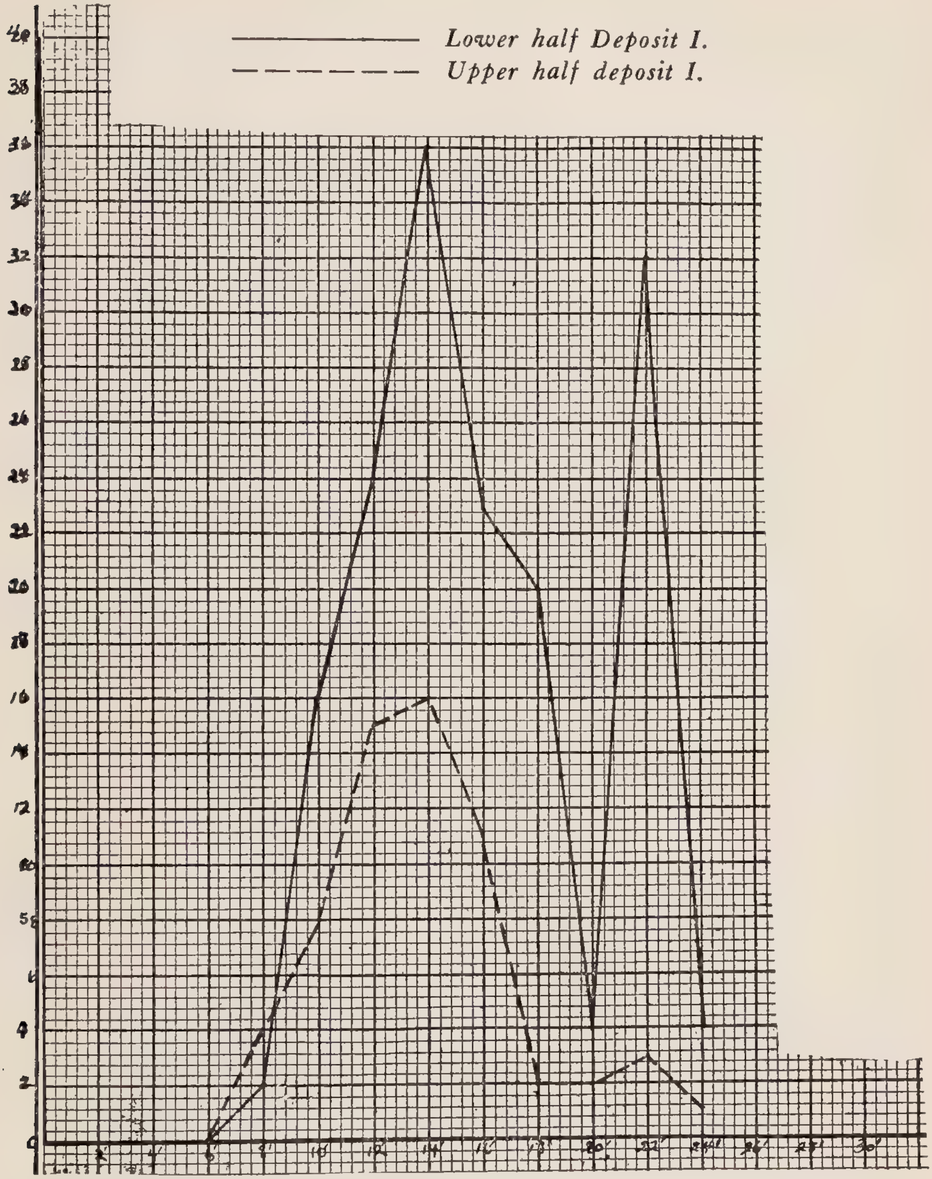
Engraved limestone blocks were also found; some were phallic in character, showing the vulva; others had more intricate designs, whose meanings could not be discerned.

Some study was made of the occurrence of definite types of implements as regards numbers.

Two diagrams show the frequency distribution of the Tarte scraper, one at 30-35 feet from the east wall, the other 35-40 feet from the same plane. It will be seen in both cases that the largest number occur from 14-22 feet from the rear wall. This and similar occurrences in the case of other tools indicate that there were favorite positions in the abri where these tools were used. Probably where there was a maximum of protection from wind and weather combined with a maximum of light from the front of the abri, while necessity in the way of escape of smoke from the fires and other factors played their part in fixing the location of the worker. The location of chips and small flakes indicate that the work shops and the first blocking out of the utensils were at times toward the very front of the abri, although more commonly in the rear. The treatment of skins, the working of bone tools, etc., were carried on where protection from the elements was greatest.

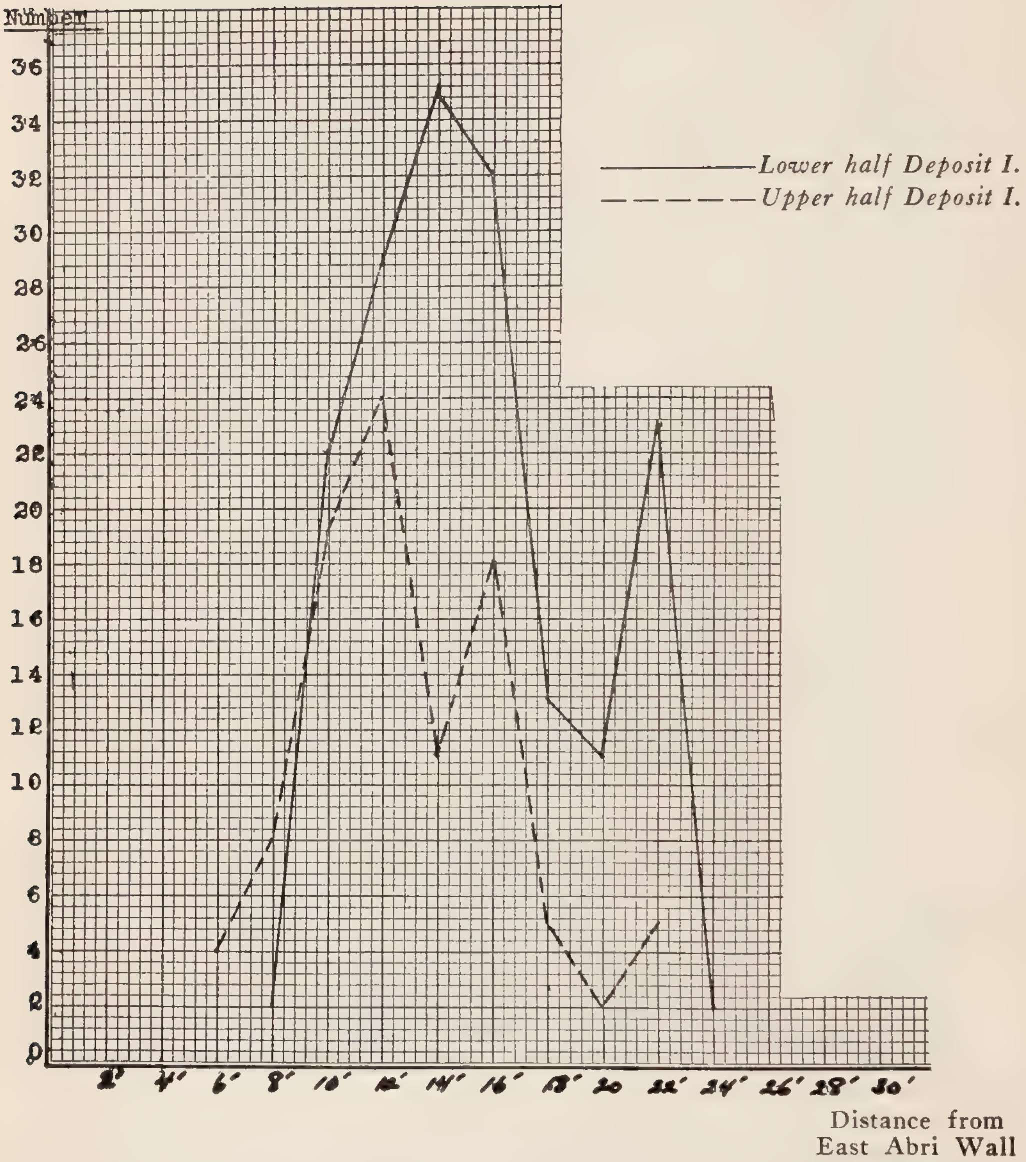


FREQUENCY DISTRIBUTION OF TARTE SCRAPER
(30′-35′ from East Wall)



FREQUENCY DISTRIBUTION OF TARTE SCRAPER
(35′-40′ from E. Wall)

Below layer II. there is a mass of sterile material about 3 feet in thickness and then cultural layer No. I. is found, averaging about one foot in thickness and containing quantities of éclats, but few worked pieces. Such as were found indicated the Middle Aurignician, although the work is cruder than that in layers II. and III. Among the faunal remains recovered from this horizon teeth of the ibex were the most common.



FREQUENCY DISTRIBUTION OF SIMPLE AND DOUBLE GRATTOIRS (2nd. Sect.) (45-50 feet)

In all horizons there are thousands of unworked éclats and lames as also stone polishers, hammers, nuclei, etc. All pieces showing evidences of use or of retouching were saved and forwarded to the Logan Museum save that a representative series was presented to the Museum at Les Eyzies.

La Ferrassie, a site a few miles away from Le Moustier, has commanded much attention. Capitan and Peyrony(1) have made careful excavations and have reported fully on their finds. These investigators state that bone was used here quite freely, and they have made a subdivision of the Middle and Upper Aurignacian on the basis of its occurrence. The division is as follows:

1. The lower division is featured by lozenge points *(pointes losangiques)* with a split base.
2. Flat lozenge points with solid base.
3. Elongated lozenge points, often notably elongated, with a strongly ovate cross section.
4. Biconical points.

This account may suffice to give the reader some idea of the condition in the average stations of France. The industry in flint plays a much larger part relatively than it did in Moravia and the mammoth has but a subsidiary place in the Aurignacian of France, its place being taken by less conspicuous animals as the horse, the bison and reindeer.

PROVINCE OF CONSTANTINE, ALGERIA

The third region to be considered is that of North Africa and the station chosen as a type of the occurrences there is that of the Logan Museum site at Mechta el Arbi, province of Constantine, Algeria.

The description of the station needs to be prefaced by a statement regarding the difficulties arising in attempting comparisons between the Aurignacian remains of North Africa and those of Central Europe. The occurrences and the general conditions in North Africa are very different from those of Europe and the full significance of these differences has not been worked out as yet. Hence the attempt to compare the Aurignacian of the two continents is somewhat hazardous, although the time has come to attempt it.

Some of these difficulties are: Firstly, the effects of continental glaciation in Europe are much more marked than they are in Africa; it affected the climate of North Africa, but how much, is not certain. The change in climate had its effects upon animals and mankind but the sum total of these effects in Africa as compared to those in Europe, are not known.

Secondly, according to the competent authority of Boule, no such sharp separation can be made between the Pleistocene and recent faunas in North Africa as is possible in Central Europe. In Africa living forms more nearly resemble Pleistocene types, generally speaking, than in Europe. It is difficult, therefore, to distinguish their remains and to be certain that a given animal found in an Aurignacian deposit is not a species still living. Under such circumstances it is more difficult to establish a chronology based upon animal remains in North Africa than it is in France or England.

---

(1) Les Origines de l'Art à l'Aurignacien Moyen. Revue Anthropologie, Mars-Avril, 1921.

Thirdly, in North Africa, very commonly, the artifacts and skeletal remains of men are not found in stratified deposits as they usually are in Europe, hence it is extremely difficult to determine the relative ages of such finds. Very frequently the utensils are found on the surface or but slightly covered by drifting sand or earth. Often they are not found with animal remains whose known age might serve to date them.

Fourthly, the North African Aurignacian culture, while comparable to that of Europe, has certain differences which make exact comparisons somewhat uncertain and thus render the question of contemporaneity less easy of solution.

Fifthly, the archaeology of North Africa has been studied chiefly by local archaeologists who have tended to use their own terminology and to study the field quite independently and uninfluenced by the conclusions of European archaeologists. At the same time European scientists have been singularly blind and indifferent to the findings of the North African workers. There has been too little cooperation, too little sympathetic and cordial inter-relation between students of the two continents.

It may be said in general that the Lower Capsian of the North African archaeologists corresponds to the Aurignacian of Central Europe. No definite Solutrean and no Magdelenian is found south of the Mediterranean. The Upper Capsian, therefore, takes their place, continuing with little change to the period of transition to the Neolithic, known as the Azilian and Tardenoisian in Europe. The Upper Capsian has two phases in North Africa,(1) the Western or Ibero-Maurusian, and the Eastern or Getulian.(2) Many exceptions can be taken to the general statements made here but they may stand as generalizations. For reasons already given the terms Getulian and Capsian are not used in this work, but what is felt to be the equivalent name, Aurignacian.

If relationships with the European Palaeolithic are ever established in North African archaeology which are even approximate, if contemporaneity is ever shown, it can only be done by careful comparisons between the faunas and the utensils, actually in situ, of the two regions. During the spring of 1927, the Logan Museum expedition has been studying a Mousterian-Aurignacian site which has stratified beds and both fauna and culture. The material collected has not been sufficiently studied for publication, but it is in such sites as that at the Museum station, Ali Bacha, that the problem of contemporaneity must be settled.

That there was more or less synchronism between the Palaeolithic cultures of the two continents, is entirely probable because migration

(1) Some authorities give the name Getulian to the Lower Capsian. The writer follows the more common practice in using the term Capsian for the whole age.
(2) Human Origins—MacCurdy, vol. 1, p. 159.

back and forth across the Mediterranean was possible at times, and if possible, it doubtless took place.

The culture of Europe apparently, more than once, felt the impetus of African-Aurignacian influence, perhaps by way of Spain, possibly by the occasional land bridge connections through Malta and Sicily.(1) Possibly the round-about way through Egypt, Palestine, Asia Minor and the Balkans was used, though this third route is very improbable. It is difficult to explain the similarities of the cultures north and south of the Mediterranean unless there was more or less migration back and forth, more or less interchanging of ideas and more or less commingling of these separated cultures.

Much objection has been raised against the assumption that there was, in Aurignacian times, a land bridge across the Mediterranean over which Grimaldians and other African people could pass. It is true there is no proof of its existence then, nor is there disproof, and it seems like good common sense to assume its existence, occasionally, as furnishing the best explanation of the striking similarity between the Aurignacian of Africa and of Europe. There are enormous quantities of palaeolithic utensils in North Africa and so many of them bear such close resemblance to European types that the old time explanation of parallelism of cultures does not suffice; only contacts, more or less direct, can explain the likenesses found.

To the writer's mind contacts between African and European Aurignacian cultures must be assumed and migration in some direct fashion must have been the means by which the necessary contacts were made.

It is unfortunate in many respects that the earlier studies of the Upper Palaeolithic did not take place in North Africa or at least in the Mediterranean basin where the culture of the epoch is simpler in some ways and more uniform than it is in Europe. A different view of the Upper Palaeolithic of Europe would now be held had its study been approached first from the standpoint of North African conditions. For one thing, it would be seen that the Solutrean and Magdalenian in Europe were rather localized and exotic cultures blooming luxuriantly under their special conditions but not really representative of what was going on over wider areas of country and among greater populations elsewhere.

The typical Aurignacian culture of North Africa is found, (1) in rock shelters or caves, (2) in snail shell heaps called *escargotière* and (3) on encampment sites.

As in Europe, so in Africa, there are pre-Aurignacian cultures, the Chellean, Acheulean and Mousterian; again there are post Aurignacian cultures of Neolithic character, but for the Upper Palaeolithic there is but the one Aurignacian type, call it what you will, Getulian,

---

(1) A land bridge between the North coast of Africa and Italy through Malta and Sicily existed in the Pliocene, but it was broken up in the Pleistocene. It may have been renewed occasionally in times of general uplift.

Capsian or whatnot. Its affinities, its relationships are with the Aurignacian of Europe. It is necessary to have this fact clearly in mind if a just understanding is had of the North African Upper Palaeolithic.

Turning to the cave phenomena of North Africa, the Grotte des Hyenes, fifteen miles from Corneille, may be taken as typical of conditions. In this cave Debruge found six cultures, each being separated from its neighbor by a sterile bed indicating that the cave was not inhabited continuously as the shell heaps apparently were. The culture found in the cave accords well with that found in the open air stations. The cave cultures are as follows:

1. Pre-Aurignacian.
2. Aurignacian.
3. Microlithic.
4. Ancient Neolithic.
5. Middle Neolithic.
6. Recent Neolithic.

The Upper Palaeolithic in this particular cave is represented, therefore, by two horizons; numbers 2 and 3. In respect to this particular culture there is a strong strain of microlithic flints all the way through but increasing toward the end until they dominate the culture. There is no sharp line of demarcation between them however and it would seem sensible to look upon the two as phases of the one Aurignacian age. These two phases occur in the shell heaps also where there is no means of separating them definitely; they are commingled in such fashion as to show that they were made and utilized by the same people. There is no indication in the escargotière that the Aurignacian and the Microlithic are two separate and distinct cultures. As a result the writer considers them to belong to one and the same culture, the Aurignacian.

Much of our knowledge of the North African Aurignacian has been obtained from the shell heaps; other forms of occurrence are rare and have not been very fully described although there is great need of more complete knowledge of them.

The escargotières are shell mounds composed of snail shells, chiefly of the genus Helix. They contain also bones of animals and occasionally a human skeleton. Mingled with the refuse of shells, bones, dust, ashes and cinders occur many specimens of the culture produced by the migratory tribes of that time. The gastropods, whose shells form the bulk of the mound, served as food for the people; apparently the staple food. In no small degree their culture is based upon the snail and was built up about this particular invertebrate as a center. The food was abundant and easy to obtain but there was no inducement in such living to strenuous effort or worthy achievement. It is no wonder their civilization moves on placidly, little changed by the passage of time, save as it may be reinforced by the incoming of other peoples.

The escargotières in form and purpose are comparable to the kjőkkenmőddinger of the Danish littoral except that the shells are univalves and land forms instead of bivalves and sea forms.

There is a great deal of light gray dust mingled wtih the organic remains as well as the ashes of ancient fireplaces, all serving as a binder for the shells. The ashes give a grayish color to the heaps by which they can be distinguished at great distances from the surrounding yellowish soil.

The culture in any given shell heap is practically the same from base to summit of the mound. In widely separated escargotières differences are found, although there is general sameness of culture throughout their extent. Apparently the same group or tribe inhabited the same escargotière throughout its history. There is little or no stratification of a definite sort in the mounds, although cross bedding is sometimes seen on a small scale.

Quite often in the case of the larger escargotière, near the surface a thin calcerous layer or hard-pan has been formed since the last human occupation of the mound. The upper surface of the hard-pan is a layer of quite pure calcium carbonate from ¼ to ½ of an inch thick and just below it the contents of the mound are so impregnated with lime for a distance of 6 or 8 inches that a hard cap for the mound is provided. This hard-pan is firmly cemented making it difficult to penetrate the mound even with a pick-axe. It covers the whole mound as a roof, sealing it in with its old time culture and separating the latter from the modern surface cultures. Over the hard-pan there are recent accumulations of soil, shells and rock fragments to the depth of a foot or more. Whatever culture is found in this surface debris is recent, long posterior to the Aurignacian.

The hard-pan layer is important because it fulfills in a measure the functions of a stratified layer in determining time relations. It can be readily determined, for example, whether this covering has been disturbed and broken up since its formation and one is able to judge whether intrusions of any kind have been made by later peoples. Since no Neolithic or later culture has been found beneath this calcareous cap, it is assumed that it was formed in Pre-Neolithic time after the Aurignacians had left the region. The particular time of its formation, whether late in the Aurignacian or in the transition age to the Neolithic, cannot be determined. As long as this covering remains undisturbed one is able to affirm that everything below it is at least Pre-Neolithic.

On these heaps through countless generations men have lived, have kindled their fires, cooked their food, worked their tools, raised their families, awaited their destiny. We of today strive to piece together from the fragments they have left, their life story, their place in the great stream of human affairs.

The escargotières are generally located near water courses and not far from exposures of limestone containing flint. As a rule they are placed on some sightly spot where a good view of the surrounding region may be had.

The Logan Museum expedition has excavated one of these escargotières, as already noted, at Mechta el Arbi through the courtesy of the owner, Monsieur G. Mercier of Algiers. The heap is of oval form with its major axis nearly east and west; it is three hundred feet in length, 165 feet in width and has a maximum elevation above the general level of the plain of about eight feet. Most shell heaps are smaller than this one and a few are larger. In the Mechta region they are not abundant; only four or five have been definitely located within a radius of ten miles. Farther to the south and east they are more abundant and, in some cases, larger.

The occupants of the mounds apparently lived from time to time on different portions of them, making separate heaps of shells, then shifting and making other heaps. This probably explains the lack of extended bedding and the presence of cross bedding with its plunging layers. Since their formation the heaps have been modified from their original form by the weather, erosion, shifting sands and by the tramping of hosts of animals, but the amount of this modification is unknown.

The culture found in the tumulus is chiefly of flint which was obtained locally from limestone cliffs that line a small near-by stream, the Oued Ouskount. The flint is black and opaque, not of a very good quality as it tends to break with a rough fracture. All along the talus slopes of these cliffs are evidences of quarry and work shop sites, the ground being strewn with flakes, broken nodules and fragmentary nuclei. Very little flint of foreign origin was found on this site by the expedition although occasional pieces were picked up.

The flint utensils found in situ frequently show the Mousterian retouch although the blades have the characteristic Aurignacian form. In a few instances a pedunculate form of arrow point has been unearthed on this site, a form which is quite characteristic of the African Mousterian. That there was some Mousterian influence here seems undeniable; some such influence as one sees in the case of Audi blades in France. It must not be inferred that any typical Mousterian occurs in the shell heaps; it does not, but only flints which hint at this influence. Thus far, true Mousterian in Algeria has been reported only in caves, rock shelters or else scattered about on the earth's surface. In spite of the probable contact of the two cultures the writer cannot agree with Debruge that the Aurignacian culture of the region is evolved from the Mousterian. Fundamentally the two cultures are too different, in spite of some superficial resemblances, to accept that idea.

The most common of the flint pieces recovered from the heaps is a narrow somewhat thick, heavy lame, without retouch, three or four inches in length and very irregular. They have no such clean-cut appearance as similar unworked blades possess in European deposits. This is partly due probably to the inferiority of the local flint. The strangulated blade is fairly common and has much the same character as the European types. Varied forms of scrapers such as the double, the flake, the round, oval and quadrate forms, are found. The carinate form, so characteristic of European Aurignacian deposits, has not been found on this site although it has been reported from other shell mounds in Algeria. No burins have been noted, although some of the retouched blades may have been used as such.

The retouched blades are of two types, namely those worked on one edge and those worked on both edges; the latter are generally quite straight and are brought to a point. The former are commonly curved, at least on the retouched side, and they range through a series of forms from rather crude types, simulating the Audi blade, through more highly finished pieces that resemble the Châtelperron and Gravette types, an evolution that closely parallels the same series in France although the work at Mechta on the whole is cruder. In addition these are small implements of the *"à dos rabattu"* form and many microliths with delicate retouch. The *bec de perroquet* blade shows also careful retouch and it is quite a feature of the culture at Mechta. Nuclei are found but they are smaller, less prismatic than those of European deposits. Hammer stones, more or less battered, are not uncommon, also stones used as abrasives or for polishing and smoothing purposes. Fragments of ochre occur but they are not common and its use by the shell heap people is not notable.

In bone there is quite an abundant series of utensils; they are for the most part pointed forms. Small pointed bone pieces, not unlike awls but with very fine and delicate points are the most common. They are too small and fragile to be used for ordinary work. It has been suggested by Debruge that they were intended to serve as picks or forks to remove the cooked snails from the shells. The pieces with heavier points were probably used as awls while the larger size ranging up to a length of ten or eleven inches with the epiphysis left intact, were used as poignards. A good example excavated by the expedition is shown in the frontispiece.

Occasional fragments of ostrich egg-shells are picked up. They are rare and they rarely show evidence of being shaped, drilled or ornamented as was so commonly the case in the Neolithic. One stone pendant and one of shell were found, but pendants or other pieces used for ornamentation are very unusual. These people evidently did not practice ornamentation in a large way although they may have used the numerous shells in their environment for ornaments. Many of them have holes worked in them. The writer does not believe, however, that they were so used.

The shell heap at Mechta seems to represent a more primitive culture than most of those in North Africa. It is one of the most westerly and northerly of these occurrences and it may have been an outpost made by earlier Aurignacians as they moved to the westward.

The shell heap culture is more advanced further east and southeast than it is at Mechta and the shell heaps are more abundant. Thus at Tebessa, near the Tunisian border, 42 of these mounds have been noted within a radius of ten miles.

As already noted the North African archaeologists, in some cases, prefer to call this older and cruder culture Aurignacian, reserving for the improved culture the name Capsian or Getulian, as the case may be. It is true that in what is called Capsian the flint blades are longer and larger than the earlier ones and there are more discoidal scrapers and burins in the later deposits. Occasionally Tardenoisian-like pieces which occur sparingly in the Mechta tumulus have been found rather abundantly higher up. In the case of bone the same utensils appear all the way through and although in what is termed the Capsian they are often larger and better finished, yet there is no essential difference between them.

In the Capsian period ostrich shell fragments are more numerous and a few of them have designs graven upon them in line or in spot.

In this later culture, too, pierced teeth for pendants are found, yet pendants of stone, bone or shell are found in all of the shell heaps early or late and the pendant idea is not, therefore, peculiar to the Capsian. It will be said by advocates of the Getulian-Capsian nomenclature that there has been an advancement in the culture from the earlier to the later occurrences. This will be granted by any observer, but it is only a natural growth and one to be looked for in any region under stable conditions. There is little or nothing in this change that calls for a new designation for the later culture. If the earlier is called Aurignacian, the later needs to be also. The same phenomenon of development is seen in the Aurignacian of Europe but the archaeologists do not use a new terminology for the improved culture; it is still Aurignacian. The action of the North African archaeologists in using the term Capsian seems unnecessary as repeatedy stated in these pages; it is not only uncalled for, but it is apt to be misleading and confusing.

The animal and human remains found at Mechta have been discussed in the chapters on the faunas and the Aurignacian races and need no further consideration. It is safe to say that human remains are more numerous at Mechta than in European deposits of like extent and that they are better preserved. The hard-pan cap has sealed the mound very effectively and prevented the all-destroying water from penetrating the burial places and effacing the remains.

If we turn to escargotières in other regions, for example those near Tebessa, much the same story is told, much the same culture is found although commonly with more pains-taking finish. The Algerian archaeologist, Maurice Reygasse(1) has given an account of his discoveries at the Escargotière de Cheric, 21 miles southwest of Tebessa. The culture here seems to be typical of that found in this particular region and the site is chosen for description on that account. Here large blades up to a length of twelve centimeters are found. The retouch on the back of these flints is remarkable for its fine character. The burins are numerous and quite a discussion ensues as to the purposes of this tool. It is assumed that they were used in the engraving of stone, bone and other materials, yet there is no engraving of any sort found on this site, except an occasional engraved ostrich egg-shell. Reygasse raises the question whether the burin was actually used solely for engraving or whether it did not have other purposes. He takes the ground that it served other uses. They may have been used as chipping implements in the retouch of utensils but the rarity of engraving certainly throws doubt upon the use of the burin for that sole purpose. In some escargotières of the neighborhood as at Beir Khanfoud, Tunisia, the burin forms 40 per cent of the total worked flints recovered and yet almost nothing of an engraved character is found. In addition to the flints mentioned, the Escargotière de Cheric contained numerous finely finished flint scrapers, microliths and strangulated blades.

---

(1) Observations sur les Techniques Paleolitiques du Nord Africain. Memoires de la Société Arch. de Constantine, vol. 41.

The shells which make up the mounds about Tebessa belong to living species, chiefly Althea candidissima and Helix melanostoma.

Leaving the description of the escargotière culture, it is necessary to consider the Aurignacian in North Africa as a whole.

Reygasse, who has had exceptional opportunities to study the Palaeolithic of North Africa, has given his impression concerning the Aurignacian there and of its relations to the Mousterian. A brief summary of his conclusions is given at this point, setting forth one view of the Aurignacian problem in that region. He finds that the Mousterian(1) is a wide spread culture in North Africa and that it is identical with that of Europe to all intents and purposes. The culture is found not only in the Northern areas but very widely throughout the Sahara Desert.

This investigator recognizes a three fold division of the Aurignacian, the general characteristics of which are as follows:

1. The Lower Aurignacian with a crude culture which is under decided Mousterian influence, well represented at the Algerian site of Ouled sidi Abid, 37 miles south of Tebessa.

2. The Middle Aurignacian with a characteristic exposure at Zarif el Ouaar, 96 miles south of Tebessa. This station has been more or less eroded, but ashes to a depth of 1½ meters still remain in situ. The bone in this station has well nigh disappeared, but a very fine flint industry remains to tell the story of its producers. The utensils are rich in the number and variety of the types recovered. It is stated that this site and others of the Middle Aurignacian horizon carries an even richer and more varied culture than those of like age in Central Europe. The limits of this bulletin prevent a description of this culture, but everything in flint that characterizes the Aurignacian of Europe can be duplicated in these amazing deposits

---

(1) Nouvelles Etudes de Palethnologie Meghrebine—M. Reygasse—Constantine. 1921.

of Algeria. Reygasse states, and the writer from his own observations, readily supports the testimony, that one who has merely studied the Aurignacian culture in Central Europe can scarcely comprehend the wealth of this same culture in North Africa.

3. The Upper Aurignacian, well shown at Negrine el Quedim, has a decided Tardenoisian tendency with a well developed microlithic industry which continues on into the Neolithic. By far the most abundant types of flint artifacts found in this upper horizon are the geometric forms, notably the trapezoid. Fifty per cent of the flints recovered from this site had this form. Fine microlithic blades and long, thin, narrow lames without retouch, characteristic of the industry at this period, are abundant.

Turning now to the Aurignacian of Tunisia a very good account of the culture as it exists in that country has been contributed by de Morgan, Capitan and Boudy.(1) According to these able authorities concentration of population and attendant abundance of culture in South Tunisia depends largely upon the presence of flint in the Upper Cretaceous limestone of that region.

The Palaeolithic stations occur on every hand, sometimes they are on the plateaus, sometimes in the mountains, and sometimes on the lower plains. The most concentrated population was at Gafsa, near good flint deposits. In different stations there is no mixture of culture; each station has its own individual culture without admixture of earlier or later types.

The relics found occur in alluvial deposits, in escargotières or on the surface. The alluvial deposits are rare, they are surface stations commonly and they show no signs of disturbance since their abandonment. This circumstance may be due to the paucity of the population which in turn was caused by the extreme desiccation of the area.

There are two types of surface deposits in the earlier Palaeolithic but when the Aurignacian period is reached they tend to be combined into one. 1. The workshop site. 2. The camp site. The workshop sites are large, well placed, from the topographic standpoints, on some height or slope and yet near outcrops of choice flint. They contain roughly blocked material, but little that is finished. The camp-sites are more numerous, but individually do not cover much ground. The small extent of the camp-sites is taken as an evidence that the people were divided up into nomadic bands of limited size. On these encampments various utensils are found, also roughly fashioned tools, nuclei, flakes, all sorts of flint refuse, fire-stained stones, etc.

When we come up into the Aurignacian there is a tendency, as noted above, to combine the camp and quarry sites and in such cases there is more material present, more food refuse, bones and shells, which are lacking on the sites of the earlier Palaeolithic epoch. This fact would indicate that the Aurignacians were more permanent than their predecessors and less given to nomadism; the abundance of ashes and refuse testify to this point also.

---

(1) Station Prehistorique de sud—Tunisien—Revue de'Ecole d'Anthropologie, 1910.

The Aurignacians seemed to have rather decided ideas as to the placement of their camps. The Mousterians and earlier peoples placed them near streams, especially the confluence of streams and at the same time, if possible, chose an elevation that commanded the surrounding region.

The Aurignacian man, while he might place his camp in the open, generally sought the protection of cliffs, or rock shelters. He evidently preferred greater seclusion, possibly with an element of safety in his thought. This idea is further borne out by the fact that normally these rock shelters are found in ravines or gorges, not in sightly or exposed positions. Here again we have some evidence of the retiring and unwarlike, if not timid, attitude of the Aurignacian people.

The authors enter into quite a full discussion of the Aurignacian in Tunisia and of the three horizons into which they find it divided. The story is much the same as in Algeria and needs no detailed description. The Lower Aurignacian culture shows the usual Mousterian influence with its curved blades of the Audi type, quite well retouched as are most of the utensils in this horizon. The authors prefer to use the term Capsian for the middle Aurignacian horizons and thus follow the North African custom. Accordingly, their Capsian contains large blades with vertical retouch, thick scrapers and a slight amount of polished bone. The Upper Capsian (Upper Aurignacian) is distinguished by a great quantity of small blades, polished bone, ornaments and the use of ochre.

Pallary, especially, has called attention to the microlithic industry so prominent in the Upper Capsian of Tunisia with its numerous trapezoids of flint. He states that in certain areas the trapezoids are replaced by triangles as at Fedj-en-Nahla, while in other localities as at Henchir, Sovatir, semilunar microliths replace the other types. Probably all of these differently shaped microliths are intended for the same purpose but different groups or even different sections of the same group had different ways of shaping them.

Some authorities would see in differences such as those mentioned an evolution of industry during the Upper Aurignacian (Upper Capsian). This inference on the whole does not seem necessary although it should be said, that in some localities large and rather coarse implements occur, microliths being a small minority. Then there are stations where all types abound, both coarse and fine, and lastly, there are sites where geometric forms occur almost exclusively with an approach to the Neolithic. As microliths run all the way through like a continuous thread in the weft, it may be doubted whether an evolution of culture is indicated. It seems fully as likely that shifting populations simply brought in their own particular type of industry for the time being.

The Tunisian Aurignacians used ornaments of bones and shells, chiefly the genera Nassa and Cardium from the Mediterranean. These shells were pierced for suspension. Ostrich egg-shells were widely used for beads and they are frequently engraved with simple lines or colored with ochre.

As in Algeria so in Tunisia the people lived in encampments quite extensively. Here are found innumerable sites scattered over the country in the oases and on the heights where man has lived through long periods of unrecorded time. The stations are covered with ashes, charred wood, burned earth and refuse of all sorts ranging from a few centimeters in thickness to a metre or more. Many of these old time encampments are hidden beneath accumulations of sand, dust, incrustations of lime or of iron, only to be revealed by the chance excavations of some burrowing animal or made known by the scattered flint refuse of some near-by ancient workshop. The steppe fauna found on these sites is not materially different from that still roving the country today. The climate itself, in all probability, has not changed greatly since Quaternary times.

Further to the south in the Sahara traces of Aurignacian culture are found, very similar to that of the Mediterranean littoral and showing much the same treatment; that is, the fine, abrupt retouch which characterizes the Aurignacian everywhere. Unfortunately no careful study of this more southerly culture has been made and no further account can be given of it.

It can be seen that the Aurignacian is a culture of long history in Tunisia, standing forth with marked distinctness and individuality. There is difficulty in delimiting the top of it from the Neolithic for there is such a gradual passage from one to the other that it is hard to say where one ceases and the other begins. In this respect the conditions in Tunisia are much the same as in Algeria. The Palaeolithic fades away into the Neolithic gradually as if the two peoples lived side by side, the Neolithic gradually but surely absorbing the earlier peoples at least culturally and probably physically until they blend in one indistinguishable whole.

The Aurignacian man apparently entered Tunisia at a time when the climate was changing, the change favoring a people who had greater and more varied needs than those which had existed among prior inhabitants. The change was such that a more sedentary life was possible. The fact that the people lived largely on snails is one reason for believing in a climatic change. There is rainfall sufficient to maintain the numbers of gastropods but there is not enough to furnish pasturage for the large game animals which are not largely represented in the escargotières. The non-necessity of hunting game led to a more settled life than had been possible hitherto.

According to Gobert(1) the Aurignacian culture is developed to an extraordinary degree in Tunis giving one the impression of a relatively large population, one which occupied the country over a long period and whose stability gave rise to a promising culture. This

(1) Introduction à la Palethnologie Tunisienne—Cahiers d'Archeologie Tunisienne pp. 12-22.

conclusion accords fully with similar estimates reached by Algerian authorities for their country. The archaeologists of Tunisia go as far as to assert that there is nothing found in the Aurignacian of Europe which is not duplicated in Tunis, the similitude of the cultures extending to the smallest details. The only exception of importance noted are certain large, coarse-stemmed points which are not found in European deposits. These seem to be of Egyptian origin and were brought into Tunisia from that source.

The general parallelism between the Aurignacian of Europe and North Africa seems to continue until the close of the Middle Aurignacian. Beyond that time there is gradual divergence as if the two regions were somewhat losing their contacts. After the Middle Aurignacian in Africa there is less advance than hitherto. The culture remains rather static on the whole and finally loses itself in subsequent cultures. Contemporaneity of Aurignacian culture thus seems likely in Europe and Africa up to the close of the Middle Aurignacian; beyond that time there is no certainty. Until more field work is done the whole problem of contemporaneity must remain in doubt.

The occurrence of the Aurignacian further to the east in Egypt may now claim our attention. A valuable account of the Aurignacian deposits along the valley of the Nile has been contributed by Vignaud.(1) He states that different races have occupied that valley from time immemorial, long before the days of the Pharaohs and they have left traces of their industry far and near.

On the high limestone cliffs and back on the uplands which border the valley, scattered about on the surface, are found cultures ranging from the Chellean to the Mousterian. These implements are richly patinated in a chocolate brown color. *Coups de poing* of Chellean and Acheulean types are mingled with Mousterian points over the surface for a distance of 12 miles or so from the river. Below the limestone cliffs but close to their base upon the upper terrace of the Nile, now no longer reached by the river floods, the remains of two cultures are found. One of Neolithic aspect and the other a true Aurignacian type. A brief description of the latter occurrence will be given, as described by Vignaud.

The presence of this culture upon the terrace rather than upon the higher plateau is taken to mean that the climate was changing and becoming dryer; the river was retreating and no longer flooded the terrace as it had in Mousterian and earlier times and the incoming Aurignacians took advantage of that fact. They could afford to make their abodes on the more favorable terrace site rather than upon the wind-swept plateau. They located at the base of the cliff and took advantage of such protection as it offered. The particular station

(1) Une station Aurignacienne à Nag Hamedi—Bulletin de l'Institute Francais d'Archeologie Orientale, Tome 18—Caire, 1920.

described covers an area of about 2½ acres and is of the encampment type. The culture is found in the top soil of the terrace and is not therefore deeply buried. For the most part it is almost identical with the Upper Aurignacian of Europe. Perhaps the most striking feature is the great abundance of burins, about a dozen different kinds, and the numerous scrapers among which are the typical nuclear forms.

The origin of this Egyptian Aurignacian is a very vital question whose solution might throw much light on the African Aurignacian as a whole.

Vignaud takes the ground, quite correctly, that the culture is not indigenous, because a native isolated people could not initiate and carry out a culture as completely parallel to the distant European Aurignacian unless there had been more or less contact between the two regions. Taking the ground that this contact has existed, the question arises, by what route did it enter Egypt? The author takes the position that there were two possible ways by which this culture could reach Egypt. One from Europe through Tunis and Cyrenia, the other from Mesopotamia by way of Syria. The two countries evidently had contacts for the Neolithic cultures of Tunisia and Predynastic Egypt have similarities, and it is reasonable to suppose that they had the same relationships in earlier times. If, as now seems probable, the Aurignacian developed in North Africa, then its influence could easily spread eastward until it reached Egypt. Vignaud suggests that it is perfectly possible that the European culture came by way of the Sicilian land bridge to North Africa and then entered Egypt from the westward. The present writer believes that the center of this culture was in North Africa rather than in Europe and that it spread eastward from the North African center. So far as one can see now there is little evidence of migrations from Europe into Africa. Whatever slight evidence we have in Aurignacian times, the presence of negroid peoples in Europe, for instance, indicates that the movements were the reverse; that is, from Africa into Europe. The other route, from Mesopotamia into Egypt is favored by Vignaud as the more probable. This view harks back to the old theory that man and his culture originated in Asia and subsequently moved westward. The evidence for such an origin is no stronger than that for an origin in Africa and the great wealth of Palaeolithic remains in Africa compared to those reported from Asia would favor the African origin, at least of the Aurignacian, if anything.

Vignaud makes much in support of the Asiatic origin of the Egyptian Aurignacian; that it is represented there only by the upper portion and that this part thus represented is much more akin to that of Europe than to that of North Africa. There is something to be said for this contention. His intimation is that the bearers of the Upper Aurignacian culture, as they moved westward from Asia, divided into two streams; one going northwest into Europe, the other southwest into Egypt finally establishing itself on the banks of the

Nile but moving no further westward. On account of the rather static condition of the Upper Aurignacian in North Africa it might seem improbable from some points of view that it could or did affect the Egyptian culture and possibly Vignaud's view that it reached Egypt from the eastward is entitled to attention.

In the present writer's view too little is known of the Upper Aurignacian either in North Africa or Egypt to dogmatize upon the question now. The fact is that the researches both of Debruge and Reygasse in Algeria have revealed occasional stations where there is a high grade Upper Aurignacian. As yet not enough research has been expended to determine whether this is indigenous and the possible parent of the Egyptian Aurignacian or whether it is a culture which itself filtered in from Egypt. The former seems the more probable from what we know but it cannot be affirmed as yet.

Only this one Aurignacian station has been reported from Egypt and Vignaud's work to the south near Assouan shows that the Upper Aurignacian is not present in that region at all. Hence the occurrence may be extremely localized and exceptional. Vignaud found on the banks of the Nile 25 miles north of Assouan a station which shows a passage from the Mousterian type of culture to the Tardenoisian without the intermediacy even of the Aurignacian.(1) In this station there is an intermediate culture between the Mousterian and the Tardenoisian but it is so crude and Mousterian-like that it can hardly be called Aurignacian. There is, however, a thread of microlithic industry all the way through this occurrence and the work becomes better and better as time goes on. For example, the retouched blades become more and more curved and they become reduced in size; smaller and smaller until finally they eventuate in the trim symmetrical lunar microliths that are fully Tardenoisian in their finish.

It is noticeable that this crude intermediate culture in Egypt is associated with shell heaps, comparable to the escargotières of the Aurignacians further to the westward. The shells in these heaps are fluviatile, largely bivalves although gastropods are found occasionally. These shell mounds are relatively quite small but they contain an abundance of ashes, bone, rock fragments and flint. They also suggest the influence of the North African Aurignacians but the absence of their distinctive culture seems to throw doubt upon such an inference. The North African Aurignacian influence filtered in further to the north. Probably at no time was it as forceful in Egypt as it was in Algeria or Europe. The one thing which is indicated by this lone station near Assouan is that the microlithic industry could and did develop without the aid of the Aurignacian industry, as such. This seems to support Peyrony's contention that this industry had its possible origin in the Mousterian culture.

(1) Nouvelle Lithique—Le Sebilien—Bulletin de l'Institute Francois d'Archeologie Orientale—Tome 22, 1923.

CHAPTER NINE.

THE LIFE, CUSTOMS AND MANNERS OF THE AURIGNACIANS

The life and culture of the Aurignacian were centered, as we have seen, around one dominating occupation; that of hunter and fisher. He lived almost exclusively on game and fish with such vegetable food as he could secure. The dry and cold climate was not very favorable to vegetation. There probably were certain fruits and roots that he utilized for food, as all primitives who live on an exclusive diet of meat greatly crave vegetable food. Some even go to the extent of consuming the contents of the stomachs of herbivorous animals they have secured. Hunters are compelled to lead a nomadic life following the movement of animals upon which they feed.

In some quarters the attempt has been made to prove that these Palaeolithic people had learned to domesticate certain animals, such as the horse, enabling them to abandon the roving life, but there is no very definite proof of this accomplishment. Indeed it seems much more probable that with game as abundant as it was in his day it was more economical for the Aurignacian to secure animals that obtained their living from nature than it was to attempt to raise and feed them by artificial means. However the question of domestication has been so urged by a few writers that it seems best to consider its pros and cons.

The evidence in favor of domestication is somewhat as follows: The immense bone midden at Solutré in which the remains of 100,000 horses lie, is regarded as proving domestication; otherwise the Aurignacians could not have gathered together and killed any such number of animals as are found there. The animals, it is said, must have been tamed as such incredible numbers could not be obtained through the chance methods of the chase. There must have been large droves of them under man's immediate control to account for the numbers slaughtered.

The argument has little force as we have no knowledge regarding the length of time that this encampment was occupied; it may have been a thousand years, no one knows. Under this supposition one hundred horses a year would not tax hunters in the least; such a figure dispels the need of domestication and the suggested length of time is not improbable.

The French archaeologist, Piette, has interpreted certain lines found engraved on drawings of horses as bridles or halters which indicates that these animals have been brought under restraint. It is a big question whether chance lines can be so interpreted but the argument is given for what it is worth.

In a personal conversation the writer once had with Dr. Henri Martin of La Quina, well known French authority on the Mousterian, he pointed to some bones on which were sharp incisions made by flint knives. In every case these marks were near the joints of the bone. He suggested that the Palaeolithic people understood well the anatomy of food animals and knew just where to thrust in a knife to sever a joint or to cut the spinal cord, since the marks were so near the right spot. De Paniagua(1) has made much of this fact as favoring the assumption of domestication. He thinks a hunter could not deliver so accurate a blow on a rearing, plunging wild animal. It must have been an animal tied up or standing still which permitted such accuracy of aim and then he adds that domestication alone would permit such procedure. Readers are at liberty to draw whatever conclusions they may from such a statement. It does not appeal to the author strongly, as animals could be killed in other ways than by knife thrusts in their anatomy; they could be trapped or driven over cliffs, for example. After they were thus killed the process of dismemberment would go on in the same way, whether they were wild or domesticated, in either case the dead animals would lie still enough for accurate dissection. All that De Paniagua's idea does warrant us in saying is that these early hunters knew the anatomy of the animals they pursued and they knew where to make knife thrusts for best results in the process of dismemberment.

The evidences against the idea of domestication are the following: On Aurignacian sites it is found that animals of all ages have been used for food without any discrimination. Under domestication the policy would be to conserve the young for breeding purposes and kill only the older animals for food. Such a method is called for as a means of preserving the herd and maintaining it in full efficiency. The Aurignacians did not exercise any such care. They killed indiscriminately old and young. The idea of domestication is not apparent in such want of thoughtfulness and foresight.

In case of domestication it would also seem probable that the animals would be grouped around the rock shelters or other habitations. The carnivora were fairly abundant and exceedingly predatory in that day. Their presence and activity would make domestication a debatable proposition at best and it certainly would necessitate the harboring of the domestic animals in close proximity to their human masters in cave or abri as their sole safety. If they lived in or near the shelters it is likely they would be slaughtered there. In such circumstances one would expect to find whole skeletons in the bone debris of the shelter. Any experienced worker knows that this is rarely, if ever, the case. What one actually finds present are only certain portions of the animal; such parts as were the favorite food of the people were most likely to be brought in from the hunting grounds. Skull bones and vertebrae are not common in abri deposits; the leg bones are common.

---

(1) L'Age du Renne—A De Paniagua, p. 172—Paul Catin, 1926.

In domestication the number of females greatly outnumbers the males ordinarily while in the wild state these numbers are approximately the same. In the Aurignacian deposits the indications are that there is relative equality in the numbers of each sex so far as can be determined from the fragmentary remains. This would indicate that there was no domestication.

It has been assumed generally that the dog was the earliest animal domesticated by man and that its aid was necessary to carry on the process of taming animals; therefore, if domestication was practiced we would find the bones of this animal in the abri deposits. To the author's knowledge, there is no such evidence in Aurignacian deposits, nor indeed is there such evidence in the whole Upper Palaeolithic. The one exception to such a statement, if it is an exception, is seen in a wall painting in the Abri de la Vieja, Spain in which there is depicted a hunt. In the picture two men are pursuing game and they seem to be accompanied by animals that might be interpreted as dogs. Abbé Breuil has suggested this merely as a possibility. This one picture would be no proof of domestication of the dog, in general, especially as its skeletal remains are wanting and the evidence for the domestication of the dog in this picture is exceedingly small. It is probable that the Aurignacian had not made the acquaintance of man's earliest animal friend.

The direct evidences for or against domestication in the Aurignacian are slight. All that can be said is that there is an exceeding improbability of domestication under the climatic conditions of the time, the inadequate housing opportunities in that stage of man's progress and the presence of carnivorous animals. The evidences for non domestication seem to be the stronger on the whole. Nomad that the Aurignacian was, without an abiding home and without bases for stable activities, the inducements for domestication were small and in his case probably nil.

Aurignacian man was not an agriculturist; the thoughts of men were not yet turned in that direction. The pursuit of game absorbed his energies and forbade a life sufficiently sedentary to care for the soil and to harvest the crops, especially was this true without domestic animals. There was no attempt such as is seen among many modern primitives to combine a little herding and agriculture with the hunting life. The Aurignacian was a hunter pure and simple;

he lived, moved and had his being in the herds of wild animals that surrounded him.

The question may be raised: By what methods did he secure these animals for his daily food supply? The evidence for the use of good hunting weapons among the Aurignacians is small; they did not seem to make strong reliable weapons such as the hunt demanded. How then did they secure their game? The answer is: In the same way that modern primitives obtain it when they have inadequate weapons. Max Schmidt(1) has outlined these methods and those that Aurignacian man might have used are given here.

1. *Drives.* These drives are carried out on a large scale, numbers of hunters cooperating and driving the animals toward those points where they can be secured. Animals which were more or less helpless in water were driven into the streams or lakes and clubbed as they floundered about. The Aurignacians commonly lived in river valleys where cliffs abounded and, doubtless, they went up on the heights and in their drives pursued the animals toward the cliffs over which they would fall to their destruction or to be so maimed that they were easily secured and dispatched.

2. *Hunting by pursuit.* This method is carried out on steppes and extents of grasslands and is one particularly applicable to the Aurignacians. The Bushmen utilize the method of following the game animals persistently and relentlessly until wearied, then it can be overtaken and killed with a club or knife.

3. *Stalking game and killing it from ambush.* This is the most wide spread form of hunting and doubtless has an ancient origin. The game is tracked, the hunter knows well the habits of the animal and how to deal with it. The hunter steals up to it unobserved or he lies in wait along the path the animal goes or at a favorite drinking place. The animals were also lured by imitating their calls or their cries of distress and in this art the Aurignacians were doubtless a past master as are the Bushmen of today.

4. *Traps or pitfalls.* The laying of traps or more especially of pitfalls was another possible Aurignacian device. The animals thus caught were easily killed without the use of spears or the bow and arrow; the latter the Aurignacian did not possess.

In order to have an adequate idea of Aurignacian man, his life, its problems, its adjustments and its daily round, it is necessary to rely upon a study of living primitive hunters. We can know little about him by direct observation; too little is left of their civilization to gain any adequate knowledge by such means. By studying modern hunting groups such as some of the North American Indians, the Central Australians, the Bushmen or some of the Hypoborean peoples, we may add much to our conception of the life and activity of the Aurignacians. What we see among these modern hunting groups is but a repetition of the possibilities and even the probabilities of the ancient life.

---

(1) Primitive Races of Mankind. Max Schmidt—Harrap & Co. London, 1926. pp. 116-120.

Tylor, in his "Primitive Culture" has enunciated as a general principle this thought, "The savage life of today or of the recent past is but a continuation to our own day of the social life of the Stone Age and also the arts and crafts of those far-away days." Just as there is similarity between many modern stone tools and those of the Palaeolithic people, so we may equally believe that there is a corresponding similarity in their folk ways. There is striking identity in their mental processes, in methods of work, in habits of life, and, as a result, in their general culture. The modern primitive hunter does not represent a degenerate culture so much but rather one that has stood still more or less since Palaeolithic times.

Abri deposits testify that the Aurignacians lived in the midst of the debris which they made. Kitchen refuse, fish and animal bones, ashes, charred fragments, fire place debris are scattered about the floor of their former dwelling place, commingled with tools, flakes, chips and other rejects of their flint and bone industry. Some modern writers have drawn comparisons between such conditions among the Paleolithic people and those found among modern tribes such as the Ostiaks. Both had similar ways of life and it has been suggested that these Siberian people are descendents of the Aurignacians.

In view of their similarity of life, a brief description of the Ostiak and his surroundings will be of interest in enabling us to reach a better conception of the every-day life of the Palaeolithic people.

The Ostiaks live in huts which they construct of skins. Their food is composed almost entirely of flesh and fish; carnivorous animals such as the Arctic fox being a favorite article of diet. The people do not cook their food as a rule but prefer it raw and begin their feasts on such tidbits as the intestines. Although they are very jovial and happy-go-lucky, extremely pleasant in disposition, ever hospitable and generous; nevertheless, they are incredibly filthy. In contrast to their attractive qualities there stands out in sharp relief their unclean modes of life. They never wash; they are covered with vermin and live contentedly in the midst of revolting filth and odors. Like the Aurignacian they throw all refuse on the floor of their habitations where it accumulates year after year—entrails of animals, scraps of fish, human and animal excreta are all commingled and trampled into the dirt floor. This sordid and unpleasant picture of conditions in the iourts of the Ostiaks probably duplicates in quite a degree those among the Aurignacians except that the latter lived in open rock shelters or at the mouth of caves where living would not be quite so intolerable as in a closed, unventilated hut.

The abri were not inhabited continuously; the occupants might stay a long period, if conditions favored; or they might speedily depart if matters were going wrong. In the abri are certain layers filled with evidences of human occupancy followed by others in which there is no such evidence.

The stratified layers in cave and abri furnish us with a record of what has happened on each site and one is able to trace out the story of their lives after a fashion by these mute evidences. One can, to a certain degree, determine the succession of events that took place of old in some favorite rock shelter.

In the productive layers one frequently finds pieces of flint which are different from the general run of those found in the abri, either in material, in form or in workmanship. It is entirely possible that these stray pieces were brought in by wandering bands and dropped where they lie, perhaps by some chance rovers who camped on the site for a brief period and then went their way. Their culture was more advanced or less advanced than the average found in this particular station. In several instances the writer has found stray pieces at a given station that were unlike the other culture. This was true at the Logan Museum site of the Rocher de la Peine, Les Eyzies, where a small cache of microliths containing some 27 pieces was found, all lying close together. The microlith, while present, was rare in other parts of the abri. It is true such flints may have been brought in as objects of trade and taken to the habitation as such; or they may, with equal propriety be looked upon as the chance leavings of migratory groups.

At the museum site of Labatut near St. Leon in the Dordogne, the following conditions were found several times. There would be evidences of a foyer or fire-place, burned earth, blackened stones and charred debris, and about this fire-place bone fragments, sometimes in abundance. Scattered about through the bone debris and that of the foyer are numerous pieces of lames or of éclat. These pieces are rarely if ever retouched. They represent pieces struck off from nuclei and used as knives without further attention. What may this represent but a hurried meal made upon the flesh of reindeer or bison, the knives for cutting the flesh and scraping the bones being made as they were needed and then thrown aside. The group gathered for its evening meal, devoured what they needed and perhaps the next day hurried to some other abri. In some portions of the Abri Labatut, well finished utensils are found, but in several instances groups of unworked lames and éclats were encountered mixed with broken bones. Their testimony is that of hurried occupancy; here today, gone tomorrow.

In his well known work "Ancient Hunters" W. J. Sollas has advanced an antipodal idea to that suggested by the life of the Ostiaks. According to this writer the Aurignacians far from moving northward or remaining to wander about Europe elected to move southward finally crossing to Africa where they continued their southward journey until they reached the cape region. Here they may be represented by that remnant group, the Bushmen. He points out that these people are, even now, a primitive hunting race; nomads who live largely in the Kalahari Desert. They make their abodes frequently in caves and, like the Aurignacians, have the habit of depicting animals upon the walls. These representations, while bearing obvious differences from those of the Aurignacians, have certain interesting similarities which suggest connections with the old Upper Palaeolithic of France and Spain. The technique is much the same according to Sollas.(1) In the opinion of the present writer, the Bushmen art bears striking resemblances to that of the so-called Capsian art of Southeastern Spain as described and figured by Breuil and Obermaier. According to Sollas, in the art of both Bushmen and Aurignacian man there is the same attempt to secure fidelity in the form and in the movements of animals. The fondness of the Aurignacian artists for carving images of steatopygous women is duplicated in the art of the Bushmen. Their women to this day have such figures and the drawings of them naturally show this feature. It is probable that the women of the Aurignacian day had similar characteristics.

(1) Ancient Hunters—W. J. Sollas—Macmillan Co. 1911. pp. 259-270.

The ideal standard of beauty in the female figure is the same in both groups.

Again, the earliest remains of Aurignacian age found at the Grotte des Enfants near Mentone are negroid and have some Bushmen affinities. It is on the basis of facts like these just cited that Sollas suggests possible relationships between Bushmen and Aurignacian. If such a connection seems at all likely, then the habits and customs of the Bushmen have greatly added interest for those who study the Upper Palaeolithic age, since they help to reveal the life and habits of those ancient hunters.(1)

Sollas tells us that the Bushman is a skillful hunter, using the bow and poisoned arrows in the chase. He has the habit of forming large accumulations of bones, the remains of his feasts and which remind one of the Aurignacian bone middens although the former are much smaller.

He utilizes all kinds of animal life in his bill of fare. He is not averse to a diet of locusts and the eggs of the white ant are considered a great delicacy. Frogs and snakes are also employed for food on an extensive scale and the vegetable kingdom is ransacked for seeds.

In the matter of art, the Bushmen carries his love for it into every department of life, through painting, engraving and more rarely by sculpturing.

While the caves are regarded as their real homes, they built and used light huts which were simply and easily transported. The framework of these huts consisted of bent sticks covered by neatly made mats of reeds laid side by side and sewn together. These tent like huts are only about three feet high, additional head room being secured by excavating the ground beneath them. The huts are often ornamented by using broad bands of color upon the covering.

The people are fond of music and dancing; they have simple instruments such as drums, reed pipes and a species of stringed instruments. In their dances which are often of the ballet type, the performers are accustomed to put on a dress which shall suggest by its form or decoration the part they are assuming. They are exceedingly fond of imitating the life and habits of animals and of human beings.

Some of the animal dances, especially that of the baboons, are extremely amusing. The dances may be very poetic in character, very

(1) In the writer's view the Bushmen are in no sense of the word descendents of the true Cro-Magnons but they were influenced by Aurignacian culture, which infiltrated into their habitat in one way or another.

rhythmical and graceful in execution; such is the dance of the bees. They also indulge in dances of a more magical character; those intended to secure success in the hunt or the reproductive rite dances which aim to bring about increased numbers of game animals or of human population.

The Bushmen have a voluminous series of folk-lore stories which are told and retold times without number about their camp fires. They also have a deep sense of the mysterious in the world about them. This preys upon them and heightens their superstitious fears. They believe in a hereafter and have a custom very similar to that of the Aurignacians of painting the dead body with red colors, or of placing the body at burial in red ochre.

Many of their religious ideas and rites are grossly materialistic and these throw a shadow over the purer and more exalted side of their worship. There is that strange mixture of high and low, of noble and ignoble in their religion which characterizes that of all primitive and pagan peoples.

The caves of the Bushmen were not only dwellings but certain of them were rallying points for meetings, especially of clans and many of the mural paintings in these caves have clan or tribal significance.

It is of interest to note in this connection that not every one in the tribe may make paintings; only those were thus privileged who were especially gifted. During the life time of an artist or indeed as long as his memory lasted, no one dared to interfere in any way with the picture he had made. It was only after he was utterly forgotten that his pictures might be partially or wholly obliterated by his successors in the realm of tribal art. As many as five paintings one over the other are known in some instances, a circumstance strongly suggestive of conditions of like import in the caves of France.

Most of the Bushmen paintings seem to have a historical significance in connection with the records of the tribe. In some cases they are merely pictures, representations of the artist's esthetic feelings. Scarcely any of them have been interpreted as having magical significance nor as expressing mythical ideas as is apparently the case with some of the art in European caves. A mythical interpretation has been assigned to a few of them, however.

When we come to consider stone and bone implements there is a striking resemblance between those of Bushmen origin and those of the Aurignacian, especially in the case of scrapers and of lames with retouched backs. Too much ought not to be made of this fact probably, but the likenesses are notable.

Like the Aurignacians, the Bushmen have intellectual ability of high order; they understand thoroughly and clearly all that concerns their lives in their relation to the environment. They are a peaceable, generous and hospitable people, earnest lovers of freedom and brave defenders of their tribe and its rules.

Their scanty historical records, largely legendary, seem to indicate that they came from the north by various routes. Mural paintings and engravings, having many features in common, can be traced all the way from the Dordogne in France over the Pyrenees into Spain, across the Mediterranean into Algeria and Morocco, across the Sahara, past the great lakes of Central Africa, on through Rhodesia and the Transvaal to the cape. In the greater or less unity of those artistic representations, one may find evidence for contacts between Aurignacian and Bushmen. The so-called Capsian art, found chiefly in Spain, has striking similarities. It is the writers belief, taking all the facts into consideration, that North Africa was a centre of dispersal for the Aurignacians; that some of them moved southward perhaps ultimately to influence the earlier Bushmen. Another portion moved northward into Spain where they leave evidences of a so-called Capsian art and so move on into Central Europe, perhaps ultimately migrating northeastward with the retreating steppe fauna into the remote regions of Mongolia or Siberia where they have been merged into some of the existing peoples of those areas or at least may have contributed to their culture.

Because there is possibility of just such migrations and of contacts between peoples as has been suggested, the writer has taken the liberty of introducing in this connection a brief story of the Ostiaks and the Bushmen in the belief that their lives are a reflex, at least in a measure, of the long antecedent life of the Aurignacians. The writer has no desire to attempt the hopeless task of proving physical relationship between these modern hunters and those of the Aurignacian. The sole object in bringing the Ostiak and the Bushmen into the account is that their ways may help us to understand and appreciate the ways of the Upper Palaeolithic people, that we may better know them and the problems they continually faced. In closing these considerations it may not be inappropriate to quote exactly the appreciation of the Bushmen as set forth by Sollas, feeling that it, too, is a tribute to the Aurignacians of the olden time. "The more we know of these wonderful little people, the more we learn to admire and like them. To many solid virtues, untiring energy, boundless patience and fertile invention, steadfast courage, devoted loyalty and family affection—they add a native refinement of manners and a rare aesthetic sense. We may well learn from them how far the finer excellencies of life may be attained in the hunting stage. In their golden age, before the coming of civilized man, they enjoyed their life to the full, glad with the gladness of primeval creatures."

The question is often raised whether the Aurignacians did or did not construct huts and use them in place of the rock shelters. Some have felt that the bulk of the population, especially among those of more sedentary tendencies in favored regions built and occupied such habitations which they placed on the banks of streams or shifted from place to place in the course of their migrations, perhaps leaving the rock shelters to the more migratory groups.

Certain rock drawings in such caves as Combarelles and Font-de-Gaume in the Dordogne are supposed to represent huts. These so-called tectiform drawings or engravings may be viewed as huts; it is hard to interpret them as anything else. It would not seem to be improbable that as early as the Aurignacian age men were actually constructing rude shelters with frames of small timbers or branches, filled in with brush or grass over which possibly skins were drawn for covering. There is of course, at this distant day, no direct evidence of such structures. We have but the indirect evidence of the cave drawings and the probability of their erection by the active minded Aurignacian, together with some hints of such buildings in the Somme Valley of Northern France. Here there are indications of life in the open, in some of the river deposits. Especially toward the base of the so-called brick clays an industry is found which contains many examples of an Aurignacian-like culture. With it are associated bones of the mammoth, reindeer and horse. These finds come from river terraces and are not associated at all with abri or caves as in Southwestern France. The people who lived here in spite of inclement weather, camped along the river courses and the presumption is strong that they used artificial shelter. The fact that they knew how to live out in the open and the added circumstances that they had no natural shelter, leads one to infer the practice of building huts to serve that purpose. They would need protection of some kind and the supposition is that they made it.

We do not know anything of the tribal life or organization of the Aurignacians, nor of their family life, but there must have been some tribal control such as is demanded in all hunting groups, for example the parceling out of hunting grounds, or of laying down rules for organized hunts and the prevention of wasteful private hunting especially of amateurs with its danger of frightening away game or of rendering it suspicious and timid.

Living in the close quarters of the abri or cave there must have been an attempt at social organization of one sort or another. They evidently made much use of fire and around their foyers they must have lived day by day. Fire was an absolute essential, not alone for warmth and comfort in their cold climate, but as a protection against the wild animals that continually prowled about their habitations.

It is well known that all predatory animals fear fire and flee from it. Behind their blazing hearths these ancient people were secure and at peace. The place of fire was central in their organized life and about it they must have gathered to talk and plan about their common interests. In its glowing presence they could sleep without anxiety or dread.

Necessity demanded clothing for these people and, without doubt, they used skins for that purpose. They enjoyed and used all sorts of ornaments made from bone, ivory and shell. They utilized these in the forms of pendants, bracelets and necklaces, attaching them to their clothing or to their head dresses. Such ornaments were relatively numerous and must have been important in giving the wearer that distinction which human beings have ever craved.

These decorative objects not only served the living but were buried with the dead. Both men and women wore ornaments and there seemed to be little difference made between the sexes as to kind or amount of ornaments used. Judging from burials both sexes wore the same styles of ornaments. Even children had their ornaments much the same as their elders. In all this there is testimony to the fact that there was family life, that men and women were on much the same plane, that there was an equality of the sexes and that children were loved and petted much as they commonly are in the aboriginal life of our time.

In all that concerned their immediate welfare these Aurignacian hunters were exceedingly keen. They had no philosophy of life; they worried not over their sins nor the hereafter. They were extremely and deeply interested in the animal and vegetable world about them, not because of any scientific interest at all but because it ministered to their physical needs. Like the hunters among the American Indians, Aurignacian man knew all the habits of animals; he knew their cries and calls and he knew how to imitate them perfectly. He knew the haunts of animals, how to take advantage of them, how to lure the unsuspecting within thrust of his spear or into some trap he had devised. He was a superb tracker, he, doubtless, could follow the trail unerringly, knowing the significance of each footprint, of each misplaced twig or blade of grass. His senses were keen, alert and trained to the highest efficiency. He was a match for any animal in cunning and could forstall their movements and anticipate their instinctive courses of action. All in all, he was well qualified for the life and activities of his particular day and generation.

Withal he probably was not a mere sordid materialist but had developed some things of the spirit such as art or burial rites which indicate thoughtfulness on his part.

Everything in his culture thus far recovered seems to indicate that he was a man of peace. The utensils which he has left behind him are those of the household, not those of war. He accumulated no property and the lust for other men's possessions, the basis for most modern wars, had no place in his thought nor in the life of his time. All of his resources were taxed to master the great primeval world in which he lived, too much so to waste his days in foolish rivalries, covetings or vain regrets over lost opportunities of plunder.

Men did not prey upon each other in Aurignacian times; that was left for civilization. Aurignacian man could go about his daily tasks without fear of his fellow man and without dread at his approach.

Great herds of game of varied sorts were a familiar sight to him; he had the tremendous thrill of watching these animals as they moved about in endless troups. He could revel in the abundant bird life which at times in seasonal flights must have darkened the very heavens. He could be glad too in the teeming life of the waters and fascinated by it.

He had the passionate sense of freedom, of being alive; the sense of a great field about him for his activities that comes to all pioneers and to all primeval peoples.

His great day can never be reproduced on this earth. The animal life so abundant and varied has disappeared forever; the wild and savage surroundings of his time have given way under the aegis of a more genial climate and the influence of civilization. His was a period unique and thrilling, filled with hardships indeed but resplendent with great scenes and tremendous experiences, and he enjoyed it to the full, savage though he was.

He and his age have disappeared never to return; both are but a memory of things that were. We may look back upon them and we do well to take the retrospect, to gain some idea of their life and the great primeval world of which they were a part and which in no small degree they mastered and thus blazed the way for us who live today.

There is in most of us, at times, an unquenchable longing for the great open spaces, for the wild life in the midst of nature. Is this not a reverberation of their free, untrammeled life springing up in us, a harking back to the heroic days of which they were a part?

CHAPTER TEN.

THE ART OF THE AURIGNACIANS

One of the greatest gifts of Aurignacian man to civilization was the creation of art. It can be truly said that this man was the first artist; to him first came the great idea of self expression in artistic ways which from the very first and probably simultaneously took the forms of engraving, sculpture and painting. These works of art are found on the rock walls of caves or abri, upon loose pieces of stone, bone or ivory utensils and sometimes upon the clay floor or clayey walls of the caves.

The art of the Aurignacian especially in its decorative form is widely spread throughout Central Europe, but the principal center of this dispersal, if we rightly interpret conditions, was France and Northern Spain. Here, on the whole, this art is best developed in all of its phases and it would seem that it was from here that it made its way in various directions. It is well to note that even in the art centers such as France and Spain there is no general distribution of the art over these countries; it is only here and there that it appears.

Upper Palaeolithic art is confined to certain centers, the chief of these are as follows:

First, a center in the Dordogne region of France, chiefly in the environs of LesEyzies de Tayac where the art is found in such caves as Font de Gaume, Combarelles, La Mouthe, Tayac and the Abri of Cap-Blanc.

Another important center is in the Pyrenees with such notable exhibits as those of Niaux, Tuc d'Audoubert and the Trois Freres.

A third center lies in Northern Spain where there is a remarkable array of engravings and paintings in such caves as Castillo, Pasiega, the Hornos de la Pena and above all Altamira. There are minor occurrences outside of these three centers but they are not important.

The purpose of the art portrayed by the Aurignacians is possibly fourfold:

1. It is decorative in its intent; simple lines or designs are used to ornament or embellish weapons and utensils, to make them more

attractive and perhaps to give them distinctive ownership marks. In addition to this form of decorative art there is a great series for personal adornment such as pendants, pins, beads, pierced teeth, bracelets, shell ornaments et cetera.

2. The art exists for its own sake, not for embellishment nor for any ulterior purpose; its sole aim is to represent the artist's esthetic feelings.

3. It exists to secure increase of animals by means of the magic influence inherent in artistic work, or to secure animals for food; that is, to give one success in hunting through these magical influences.

4. The art may have some totemic significance. This view seems improbable, at least in the Aurignacian, but it is possible.

There can be no question of the first of these purposes,—that of decoration. There is a great difference of opinion among archaeologists concerning the others; this problem will be discussed later on. Whatever be the purpose of their art, the Upper Palaeolithic peoples show a decided tendency to homogeneity and uniformity in art expression throughout their epoch. Even though the technique may vary and there may be gradual improvement in art expression, yet the ideas that lie behind that expression are much the same all the way through. There is a homogeneity in the art that cannot be denied.

The subjects for artistic expression are principally animals and human beings. In the Middle Aurignacian it is the human figure, especially the nude female that is engraved and sculptured by the artists of the time. Such are the statuettes from Brassempouy, Cro-Magnon, Baousse-Rousse, Willendorf and finest of all, the figure recently recovered at Lespugue (Haute Garonne). Later on animals form the chief subjects of representation; that is notably true in the Magdalenian where the types of animals shown, and the wound marks or other designs made upon them, indicate that they were created for magical uses rather than purely artistic purposes. In the Aurignacian such art as is represented gives little hint of an ulterior purpose like that of magic. It seems generally to be pure art, but a kind that is often executed carelessly or indifferently as if done by thoughtless scribblers or by untrained amateurs. In other cases the work is well done and gives evidence of real artistic ability on the part of the executor. What circumstances, we may ask, give rise to artistic effort aside from the apparently instinctive desire in the *Homo sapiens* group to express itself thus? *First* of all, the people must have a reasonable reserve of time and of physical well being. Art and ornamentation among a people is proportional to the amount of accumulated wealth, to the comfort and the freedom from strife that has been secured by the group. If there is not a fair degree of tranquility, not an abundance that promises physical comfort, then there can be no worthy development of art in that particular tribe, no matter what its native ability may be. Those who count for most in the ongoing of true art, provided the artistic ability is present, are the people of pacific intent who are not engaged in repeated forays and conquests, and who are not obsessed with warfare, offensive or defensive. Whatever may be the truth of this principle, in general, it seems to apply to the peaceable and unwarlike Aurignacian.

In the second place the people concerned must have sufficient civilization and intelligence to provide the necessary utensils and materials for the artistic endeavor. They must know how to make burins or other tools for engraving, they must secure the proper colors, the carbon or manganese for black, the ochres for reds, browns and yellows. They must have mortars and pestles for grinding the colors. It is necessary to know how to mix the pigments with proper media, grease, oil or water in order to make the picture permanent. They must learn to make crayons for some types of work. Brushes of some sort were necessary in addition to the fingers for the application of color and these had to be manufactured, for evidently they were used in the better pictures. Artificial light, also, had to be employed and developed. Altogether, a great deal of paraphenalia was necessary for painting and it had to be invented and provided before art work could proceed successfully. For sculpture, hammers, chisels or other special tools were needed and these had to be devised and manufactured.

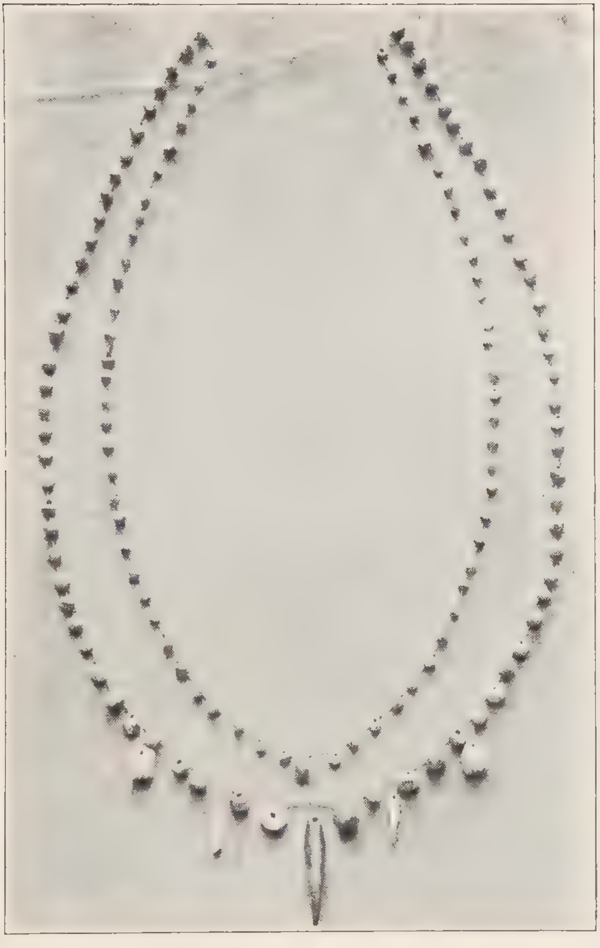
Lastly, there must exist not only the ability for art but there must be an underlying reason for its expression, some great longing or desire which can only be satisfied by artistic representations. Such longings did not appear, at least to any extent, in any race prior to the Aurignacians. It was reserved for this large minded group to express itself in art ways for the first time in human history.

The purposes sought in such representations have been given already, but a discussion of the evolution of art seems appropriate at this point.

At the outset, art appears in a very hesitating way as if scarcely sure of itself. Numerous haphazard lines are found drawn in clay with the fingers, or on the rocks with pieces of flint. These apparently have no intentional meaning, they merely represent effort without design and form the ensemble of lines called by investigators "Macaroni." It required no especial ability or purpose in making such figures; they were aimless and unintentional. In order to secure real artistic effort one must abandon the aimless method and have an intellectual desire, a purpose to create something definite. If this purpose is to be executed properly then one must have a mental picture of that which he would represent, one must know, not alone that it can be executed, but just how to proceed to secure the execution. The Aurignacians were in a position to realize some of these preliminary steps. For example, they knew that natural objects, such as a flint nodule or a piece of bone, could be modified to suit their needs. They thus gained some idea of their power to secure definite shapes. Hence they were on the road to obtain artistic representation before they attempted it simply by their mastery of utensil manufacture; by their ability to form definite shapes from indefinite material, by the satisfaction that grew up in their consciousness as they witnessed what their skilled hands could produce. Even in the haphazard drawings with which they started out they may have discovered figures which bore a resemblance to animals or other natural objects. These would at once arouse attention and it would cause them to draw these chance representations over again to secure the resemblance, but this time not by chance but by copying the object. By some such process, perhaps, they finally arrived at the idea that they could draw objects from nature. When the idea once arose the rest was easy and the drawing of natural objects went on apace.

In the earlier representation of animals, outlines were made in line or in punctate fashion. These lines grew heavier, deeper and wider with time. As time passes the custom grew of filling in the engraved lines with color for purposes of accentuating the outline. This was the beginning of painting. At first the color is confined to the outline but is gradually extended until the whole body is colored. The Aurignacian used monochrome colors only; polychrome effects, the use of modeling, shading, and perspective were left largely to those skillful artists, the Magdalenians, to develop.

In the earlier drawings of animals the work is so crude that it is



Aurignacian Necklace, Abri Blanchard, Dordogne, France. Now in Logan Museum

often difficult to know what animal is intended. The work is so sketchy, or its portraiture is so incomplete that these earlier efforts represent mere gropings after artistic expression.

As a rule these animals are represented in simple silhouettes without any perspective. The skill and the experience necessary to bring out realities which the artist doubtless desired, is largely wanting. Much of this early work is vigorous and shows promise in spite of its childishness and lack of finish. As an illustration of this Breuil(1) has recently described some interesting Aurignacian figures in the cavern of David at Caberets (Lot) France. These are paintings in red or black of such animals as the horse, the bison and the bos, which in their excellence of execution resemble early Magdalenian endeavor. In addition to these he found certain designs, notably those of the human figure traced in the clay of the cave floor, all full of life and vigor.

The general art endeavor as outlined above is improved gradually; chiefly by better drawing, a fuller completion of outlines, the bringing out of certain characteristic poses of the subject which enables one to recognize the animal intended. The art work thus far described is included in Phase I of Breuil's masterly analysis of Palaeolithic art. This analysis shows that there was an evolution in art over a long period in which can be recognized four phases or stages; the first two of which are placed in the Aurignacian age, the other two in the Magdalenian.

Capitan and Peyrony have given some interesting details of art in Phase I as revealed in their excavations at La Ferrassie at the base of the Middle Aurignacian. At this particular site the engraving process is well on its way. Sculpture was also developing for Peyrony found a statuette representing the torso of a human being. Painting was scarcely begun at this time; simple dots or bands of color are all that are found in this particular station. The art work is found on scattered pieces of rock and is called portable art or *art mobilier* in contrast to the fixed mural art.

One of the animals represented is, perhaps, a chamois. The engraving is executed with a good deal of care and by a hand capable of tracing outlines, not only deeply but in the desired direction. There is appreciation of form although in some respects there is a lack of proper perception on the part of the artist and some consequent confusion in the rendering. The naïveté of the drawing is shown by the fact that although the animal is represented in profile, the two horns are both drawn as if the animal were facing to the

(1) Revue Anthropologique, May 1924.

front. All told, it is the work of an amateur, one who has not had a great amount of experience and yet, one who has artistic tendencies and some native ability. On the same fragment of stone the head of a horse is engraved in deeply incised lines and in such a way that the neck and breast of the chamois furnish the outline for the forehead and muzzle of the horse. A deep groove outlines the jaw of the horse; the eye and the mouth are indicated by sharp incisions. The depressed ear is brought out in a similar way. Other deeply cut lines are present but their meaning is a matter of doubt. The artists in this case follow a very common practice by not attempting to show the whole animal, but the anterior portion only and especially the head. In other words, they draw those parts which characterize the animal most exactly. To these ancient artists the head was the center of the life and activity of the animal and therefore the part most worthy of portrayal.

As is common even as early as the Aurignacian, the outlines of drawings are determined in part by the natural irregularities of the rock used. The artist takes advantage of any feature of the rock, a protuberance, a chance crack or depression, which will aid him in bringing out more clearly the qualities of the animal he is attempting to represent. For example, if a portion of the stone has the form of a head, that natural feature is utilized and only lines are drawn sufficient to represent the rest of the figure. This same practice is widely used later on by the Magdalenians in their mural art.

In addition to representations of the animal kingdom, these rock fragments have designs upon them which have been regarded as sex organs, especially the vulva of the human species. This figure is often shown alone but it is also found associated with other designs with which it seems to form some connection of symbolical significance. These will be mentioned again in connection with the topic sexworship.

These drawings from La Ferrassie have been described at length because they are all in the beginning stage of art effort; they represent the same comprehension of art and all have the same artistic tendencies. These artists had realistic perceptions but their art is rudimentary, its execution simple and somewhat childlike. Like children, these artists represented the features that particularly strike them, those things which so impress them that they feel they must be shown. To the writer's mind, engraved stones such as these represent the first step in art. Art originates with them to go its way to its present colossal development. This earliest art which has come down to us represents an attempt to portray the great animal world about man; that world which so fascinated him and upon which he so depended. A peculiar and unexplained fact in connection with these drawings is that with one exception they were all turned face down; it seems that this was a common rule. This may have been done to prevent destruction through natural agencies or it may have been done to hide these figures. It was the cult of a certain portion of the tribe to use them in magic, to achieve success in hunting while the rest of the group was prevented from obtaining this benefit through this concealment. Peyrony suggests that the group was attacked by marauders who destroyed the drawings or reversed them in order to offset any magic they might possess which would harm the attackers and cause their defeat.

In many cases the lines of the drawings have the same patina as the rest of the rock and this indicates the ancient character of the work. It is entirely possible that paint was used to reinforce the engraved lines. In that case the outlines of the animal were much more clearly shown originally than now, the painted lines having disappeared through weathering. Some feel that the present imperfection of these lines was original and that these imperfections were simply the result of the psychology of the Aurignacians.

In association with these engraved rocks there are a number of pieces containing artificial depression or cupules. These cupules are of various sizes, sometimes associated with drawings but normally by themselves. These depressions may be arranged in concentric circles or in straight lines or they may have no very definite arrangement. Such cupule stones seem to be associated with the engraved stones in some particular way but the nature of the relationship is not known. They have been regarded generally as game stones to be used in some game of dexterity but their association with artistic endeavor seems to indicate another purpose. They are not works of art, in spite of their association; their meaning and purpose remains a mystery. They seem to indicate that art, although rudimentary and not highly developed, has already become complicated through its connection with magical or ritualistic observances.

At this particular early stage of art representation it is common to find the human hand painted on the walls generally in outline. These figures are obtained by two methods: sometimes the palm of the hand was covered with color and then pressed against the wall transferring its shape to the walls; sometimes the hand was placed upon the moist walls of the cave and then powdered ochre or other material was sprinkled or blown from the mouth over the hand leaving the portion covered by the hand in the natural color of the rock but surrounded by color. The first method by transfer of color from the hand to the rock is the less common method of representation. Only a very few figures of this type are known. The second method is much more common. These interesting figures can be dated back to the earlier Aurignacian in some cases. In many instances the fingers seem to be deprived of the two terminal phalanges, the interpretation being that the hands had been mutilated in ceremonial sacrifices. Among modern savages a finger or a portion of it is often cut off as a blood sacrifice or in fulfillment of a vow or for some other purpose which appeals to the person concerned. It has been supposed from the mutilated condition of many reproductions of the hand that the same ideas existed among the Aurignacians. Much doubt has been thrown upon this idea by Luquet and others and it now seems entirely possible that the Aurignacians bent the fingers when they made the outlines, thus giving the false impression of a mutilation which did not exist. Normally these images are found on cave walls rarely as *art mobilier.* This placing an imprint of the hand upon a rock was perhaps a part of some ritualistic act such as the registering of a vow as one signs and seals a compact today. This is, however, a mere guess; they may be merely idle representations and nothing more.

Another important feature of the art mobilier is the carved or sculptured female figure already mentioned. The well known Venus figures are found almost entirely in Aurignacian deposits and more especially those of the Middle Aurignacian, although some, as the well known Laussel Venus, comes from the Upper Aurignacian. These figures probably represent a magical or religious cult which was strongly developed in that particular stage. The earlier of these figures are less gross and suggestive then the later ones. They are found all through Central Europe. A fine example made from the ivory of the mammoth has been found as far as Kostienki, Government of Voroneje, Russia.

The largest of these figures known to the writer, was excavated in the province of Modena, Italy. It is 22½ centimeters high, sculptured in soft serpentine. Like many others of the Venus type, it is steatopygic, the resemblance to the figures of modern Bushmen women being very striking. Other of these figures which may be mentioned particularly are those carved in ivory, found by the French archaeologist, Piette, in Brassempouy cave (Landes, France). These statuettes are more or less mutilated, but include the famous head, known as the *hooded figure.* Some of these broken torsos show good modeling. Similar figures, the Grimaldi statuettes for instance, which are found in the Barma Grande cave near Mentone, are carved in steatite and show marked steatopygy with large pendant breasts and excessive development of the nymphs, features which are characteristic of the Venus figure wherever found.

Another well known statuette is that from Willendorf, Austria, carved from limestone and bearing traces of red paint. As is usual the arms are folded across the breast; the breasts, abdomen and thighs are enormously developed. There is a head dress shown, perhaps intended to show coils of hair; there are differences of opinion about that feature.

In the second phase of Upper Aurignacian art development as outlined by Breuil we find the employment of the same deep line engraving. The animal figures are more life like, although even here proportions are not always well observed. In general the drawings are still in profile with only two legs of the animal shown. Good examples of art in this stage are seen in the well known engraving of the mammoth in the cave of Combarelles, or some of those in the cave of Font-de-Gaume, both in the Department of the Dordogne.

According to MacCurdy the horse predominates in the representation of animals by the Aurignacian artists in France; then follow the red deer, bison, wild goat, bovidae, reindeer, etc. In Spain on the other hand, the red deer ranks first, followed by the horse, bison and bovidae. These brief statements will give some idea of the two phases of art as they have been worked out by Abbé Breuil.

At this point a digression ought to be made in order to describe a new art field revealed during the past fifteen years, situated in Eastern and Southeastern Spain and made known chiefly by the labors of Breuil and Obermaier. The art in this new center has a special character all its own, quite unlike that of the Upper Palaeolithic in other centers. For this reason the art cannot be associated with either of the phases already mentioned. The representations are almost wholly parietal and take the form of paintings. The art is found not in the depths of caves, nor in hidden corners but in shallow abri or on open walls. Both Breuil and Obermaier attribute this art to a Capsian people who came into Spain from North Africa. Its age is not known but it is probably Aurignacian, as the so-called Capsians are bearers of Aurignacian culture in the Mediterranean Basin.

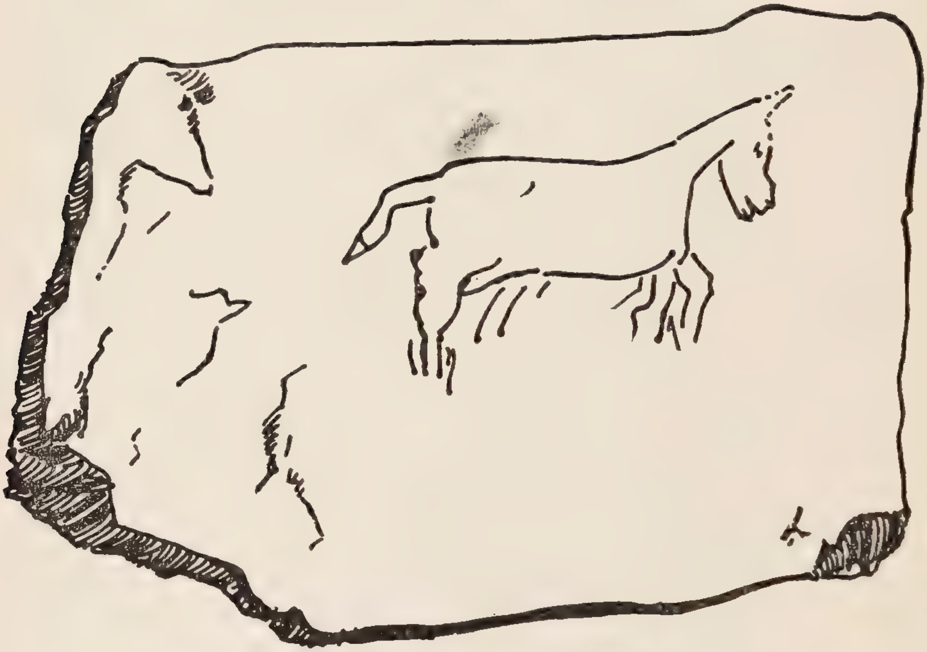
The paintings are quite original in design and have certain very individualistic characters which enables one to recognize them at sight. Luquet(1) has said of these paintings that the "originality of these Palaeolithic Spanish artists is manifested in unique fashion by the complex grouping of objects, all of them full of life and sometimes exuberant with movement." In all these pictures man occupies the first place. The scenes depicted are chiefly those of the chase, of war and sometimes of scenes in ordinary daily life. Of the latter Luquet calls attention to the painting of a man gathering honey in a tree, the bees darting angrily about him; and the domestic picture of a woman leading a child by the hand.

The Capsian art is truly picturesque and human, especially when one considers the ancient period in which it was done. It is of the highest interest also, not alone for the thought which it inspires, but for its technique, its naive sagacity which is enabled to suggest forms and attitudes by a few simple lines. The pictures are often somewhat schematic, none the less they exhibit naturalness and life.

---

(1) L'Art et La Religion des Hommes Fossiles—G. H. Luquet, Masson et Cie, Paris. 1926.

There now remains one form of art to be considered: that of ornamentation. It is not best to consider this feature in connection with Breuil's phases, but apart by itself. Ornamentation is so largely a personal matter that it can hardly be said to have phases. In general, ornamentation had its greatest development in Middle and later Aurignacian time. In the matter of art as represented in ornamentation, we find many utensils that are ornamented and many objects occur in the deposits which were undoubtedly used for personal adornment. Such are shells, bone, ivory, antler, tortoise-shell, etc. Natural objects such as teeth were freely utilized and in some cases artificial teeth made of ivory, especially those in imitation of the fox, have been found, according to Luquet.



Drawing on Stone. (Magdalenian) Logan Museum.

Very often pendants were natural forms, but frequently they were carved to imitate natural objects such as shells, fruits, insects, fish and the like. Even in the Aurignacian much realism is shown, the artists striving not so much for accuracy as for naturalness.

Shells were used very widely in ornmentation; those from the sea being preferred, especially the dentalium or tusk shell. Shells for ornamental purposes were transported all over Central and Southern Europe and they are a good indication of the wide commerce of that day. It is entirely possible that shells had a deeper significance than mere ornamentation. There was perhaps a shell cult connected with ideas of resurrection. Similar ideas have been entertained by such early people as the Egyptians.

Many of the ornaments of the Aurignacian have been obtained from burials. From the burials at Grimaldi a notable series was obtained, including perforated deer's teeth, nassa shells, fish vertebrae and handsome bone pendants. In one case a skull was covered with trout vertebrae and nassa shells. In another case a necklace was recovered with a triple row of fish vertebrae and shells broken at intervals by the insertion of the canine teeth of the stag, perforated and incised.(1) This example is cited as indicatng that in the matter of ornamentation the Aurignacians had good taste and were able to make striking and symmetrical combinations in their ornaments.

As a rule ornaments made from bone or ivory are not very artistic; crude lines or figures are likely to be engraven upon these pieces. On the other hand there are examples of pendants which are well done and attractive in every way. The Aurignacian was capable of producing ornaments of artistic merit if he would.

The string of Aurignacian beads and pendants from the Abri Blanchard, Sergeac, Dordogne, now in the Logan Museum, is a good example of what Aurignacian man at his best could do. The account of the beads given here is a free translation from the excellent description of them written by M. Didon who excavated and recovered them.

The beads in this necklace are made in part of bone, ivory, antler, and stone. The largest pendant has been thought to represent a fish and it is known to some of the French archaeologists as *"le Poisson."* On the back and sides are delicately curved lines supposedly representing scales; eyes are represented and also marks that have been regarded as the outlines of fins. (To the writer's mind the comparison to a fish is not justified and seems very improbable.) It is a very interesting and notable object and unique in its way. Two small pendants made of antler are in the form of flattened cow bells. They are decorated by incised lines and slight indentations. With these pendants were found two pierced teeth. Another pendant made of antler has the form of a conical needle with flattened head; it bears no decorations. Another sort of the same substance is thick in the middle, tapers to either end and has short parallel marks incised upon it.

---

(1) Human Origins—MacCurdy, Vol. 1, p. 211.

There are 146 beads which were found with these pendants; they range from 2 to 11 mm. in diameter. They are not all of the same shape; some are thinned at one edge so that a hole may be bored through them without trouble. These have somewhat the appearance of a round basket with a handle. In other cases, although the bead is thinned about the edge, the hole is drilled in the middle; this is the most common type. Other beads are globular or cylindrical with holes bored through their center. The beads were probably strung on hair taken from the mains and tails of the horse, or sinew may have been employed.

The method of making these beads is well shown by fragments in various stages of manufacture. The method used was to take a piece of antler, bone or ivory several inches long and scrape it down into a cylindrical form until it was about the size of a lead pencil. This piece was divided into nearly equal sections by circular grooves about one mm. deep; these divisions were then cut apart in pairs. Each section of the pair was shaped as carefully as could be by rounding off the ends to make them as bead-like as possible while the pair was still connected. The piece was then drilled through from end to end and lastly the pair was separated into individual beads. This method of working the bead applies chiefly to small types. Large beads were worked into shape separately as the maker was able to handle them and drill them singly, but the small ones had to be worked in pairs until ready for separation as they were too minute for easy handling.

As already hinted most of the beads found in the Aurignacian have come from the one station of la Blanchard. A few scattered specimens have been found elsewhere but not in any numbers. It would seem that this site was a center for their manufacture.

In a very few instances minerals and stones such as quartz, jadeite, fluorite, jasper and talc have been used for beads but they are not common.

The idea of personal adornment by means of external objects thus appears to be an ancient one, first well developed by the Aurignacians. The fancy for ornamentation seems to be present in man even before he realized the importance of arming himself or even clothing himself. Even at the dawn of the Aurignacian age, luxury, especially ornamentation, seems most appealing; whether inspired by vanity, coquetry or what not, it satisfied a deep seated need in man. Perhaps it is true that woman was the cause of it. This is hinted at in a neat phrase contributed by a French writer, M. de Clauzion, "**La coquetterie est neé comme chacum le sait, le jour ou la femme a paru sur la terre.*" The purpose of ornamentation was perhaps to aid and enhance that native coquetry which has played so large a part in sex attraction through the ages.

Whatever may be the cause of ornamentation, the Aurignacian man was the first of whom we have any knowledge who responded definitely and quite fully to this need. It may be that it was the artistic in him that called for these ornaments. Boule(1) has well said of the Aurignacians. "Endowed with a sincere and deep feeling for nature and great sensibility to beauty they were true artists, the first artists, existing thousands of years before the Chaldeans, the Egyptians or the Ageans." Their artistic souls doubtless demanded self ornamentation and self display.

It seems entirely probable that the Aurignacians, in addition to the adornment mentioned, decorated their bodies with colors, either applying it in the form of paint or by tattooing methods or perhaps scarification. The fine microlithic points which are often very abundant in the Aurignacian hints at their possible use in tattooing or scarification. On some sites red ochre is found abundantly; yellow ochre is very rare. Some thirty pounds of ochre were found on the Abri Blanchard site alone. In some instances it is found in lumps and sometimes these lumps are shaped into crayons about one inch long. As it is rarely used in drawing pictures these crayons may indicate use in self ornamentation. The ochre is also placed in bone tubes and carefully preserved as if it were carried about by the owner for use as modern people carry compacts. Ochre most commonly is ground up and used in the powdered form, either dry or mixed with grease. With the ochre is found the flat spatulae of bone, in some cases stained with the ochreous colors. They offer incontestable proof that they were used for rubbing the ochre into powder or of mixing it with an oily medium or of applying it to their bodies.

A Mother with her Child—Capsian Province d'Albacete, Spain. (After Breuil).

---

*Coquetry was born as each one knows the day that woman appeared on the earth.

(1) Fossil Men—M. Boule—Translated from the French by Ritchie—Oliver & Boyd, Edinburg, 1923.

The heavy coating of ochre seen at the end of the spatulae indicates some such use.

The writer has often seen Africians rubbing mixtures of grease and ochre over the body not at all for purposes of ornamentation but to shed water in rainy weather or to protect their unclothed bodies from insects and perhaps the Aurignacians did likewise.

The very fact that the Aurignacians painted the bodies of their dead with red colors, may indicate that the same thing was done during the life time. Then some of the graven figures that have come down to us have conventionalized designs upon them which may well indicate the practice of tattooing. No direct evidence of these practices, however, is at hand and we must leave the question to surmise.

In addition to the expressions of art already mentioned—dancing and music—generally classed as arts, were probably in use. Certain arrangements of figures in mural art, bear the suggestion that a dance is represented. An example is the Capsian picture at Cogul in Spain described and figured by Breuil. From what we know of aboriginal life, even of a lowly sort, it is entirely probable that the dance was in vogue among Aurignacians. It is safe to assume also that if there was dancing there was also music, probably singing or chanting and possibly instrumental. There is very little evidence from the deposits that musical instruments existed in that age. Certain bones with holes drilled in them, which have been thought to be whistles, have been found but the supposition that they were used as musical instruments seems to be rather far-fetched.

Art did not advance in any notable way immediately after the Aurignacian period. On the whole it suffered a relapse with the coming of the Solutreans although this group contained some good artists. It was revived, however, and carried on in an unparalleled way by the Magdalenians. We can never forget that the Aurignacian founded art; that he was the pioneer in artistic endeavor and for that service he deserves recognition. This is true even if it was left to others to carry it on and make it the fundamental factor that it has become in modern civilization.

CHAPTER ELEVEN.

RELIGION OF THE AURIGNACIANS

Did Palaeolithic peoples in the Aurignacian stage of culture have any sense of religion? Some would reply, "No," to this question. Thus Mortillet and his followers take the view that religion was not a factor in the lives of mankind until the Neolithic. On the contrary there seems to be much in the culture of the first *Homo sapiens* which indicates that he had a religion and such as it was he observed and practiced it.

The earliest and lowest of all primitive religions in historic time have complexity of structure. They possess an abundance of rites and beliefs which indicate a long history as if religion had been a possession of the race for ages, during which it was being elaborated and diversified step by step. Mainage(1), quoting Cartailhac, states that the Tasmanians, whose civilization was of the lowest type among modern primitives, had a complicated religious life and practice.

The engravings of the Aurignacians, their images, their sepultural methods, all may have a religious import, at least they can be best understood in the light of that motive. Indeed they are largely meaningless unless viewed from the standpoint of religion. At low stages of civilization religion and art are always closely connected and it is as an aid to religion that art is most intensively employed and displayed.(2)

Burial for one thing indicates a belief in religion, a belief in the hereafter, as does the attempt to preserve the integrity of the remains, the purpose being not to mutilate or destroy that which may live again. Burial does not seem to be a likely custom, until there arises in the minds of mankind some reverent attitude, some respect for the dead, that would not be felt for animal remains. It is true that fear of the dead has played its part but it is not the sole influence in determining man's attitude toward those who have departed. This special feeling toward the body, either of the dead or the living would scarcely arise apart from the feeling that it had particular value, either because of its divine origin or because of its divine destiny.

---

(1) La Religions de la Prehistoire—Th. Mainage, pp. 278-290. Picard, Paris, 1921.

(2) Max Schmidt—The Primitive Races of Mankind—Harrap & Co., London, 1926, p. 86.

Again, the remains receive some definite attention; they may be protected by stones or by large animal bones placed about them. As we have seen there were very frequently grave offerings such as flints, shells and other objects. In the Grimaldi burial of Lower Aurignacian age, the skull of one of the negroids had three large blocks of stone placed about it. The skeleton of Lower Aurignacian age at Combe-Capelle, regarded by Klaatsch as being the type for Aurignacian man, lay upon a flagstone.

In the Upper Aurignacian burials at Solutré, in one case, vertical limestone pieces were placed at the side of the head and in another the head was surrounded by vertical blocks. In the great burial at Predmost, probably Upper Aurignacian or early Solutrean, the twenty skeletons lay under a veritable pavement of stones. These intentional additions to burial indicate rites or beliefs that are essentially religious at the core.

The position of the body in burial is also significant; burials are not always haphazard. In many cases there is definite orientation in an east and west direction with the head to the west. This was the case in several interments at Solutré.

Again, there are different types of burials as if varying beliefs regarding the proper method of interment had already arisen. In many cases the bodies are placed on the back or on the left side; normally the body is not extended but flexed in a crouching position, the so-called tied burial. By some this crouching position is thought to arise from the fact that the Aurignacians knew that this same position is that assumed by the foetus in the human species at a stage of the embryonic history. As this particular position was antecedent to birth into the present life, it must also be assumed as preliminary to birth into the future life. This is a suggestive and ingenious theory first advanced by the German investigator, A. Dieterich, but in actuality it has no foundation worthy of consideration. It is not at all probable that Palaeolithic people had any knowledge of the foetal position; that has been revealed only by modern science. Even if they had the knowledge, it is a question whether they would reason out the need of an analagous position after death.

Some have attributed the idea to motives of economy, the living not desiring to excavate a larger grave than necessary. Others with much plausibility regard the tied burial as an attempt to imitate the position of the body in sleep, especially as it does closely simulate the position ordinarily taken by primitives. They draw themselves up into the smallest possible space for purposes of warmth and to protect the vital organs from exposure in case of sudden attack by enemies or by animals. It was natural for early man to look upon death as a sleep and thus natural to place the body in the position of sleep, permitting the deceased a safe sound rest and an assured awakening in the morning of another world.

Another view is advanced and in many respects it seems to be the most likely of all. The tied burial is due to the fear of ghosts. People feared that, rendered malevolent by death, the ghosts would return to plague and annoy them even if they did no more serious damage. Hence with their naive ideas they thought to keep the spirit within the body by wrapping bands about it and trussing it up in such fashion that the spirit or ghost could not escape after death took place. The process of tieing commenced before expiration and the last hours of the deceased were disturbed by this binding process, before it was too late and the spirit escaped.

There are also the so-called collective burials but their purpose is not known. An example is the burial at Predmost where twenty or more bodies are placed together. Very likely it represents a type of burial not unknown to modern primitives, where there are periodic burials. Bodies are allowed to accumulate until quite a number are at hand, then they are interred together with one general ceremony. This was done probably to have a great tribal gathering when the wholesale interment was made, rather than to attempt it at the date of each separate burial. More prolonged and impressive rites could thus be secured than at single burials.

Various forms of burial may occur side by side. Whatever may be the meaning of these various customs there is ever the evidence of care and thoughtfulness in the interment which assumes the ongoing of the life in some form of existence after death.

Again we have a custom which was very wide spread in the Aurignacian of placing ornaments, tools, utensils, food offerings and the like with the dead. This idea which has been continued to our own day must be looked upon as indicating a belief in another life where they would need the clothing and the tools used in the earthly life.

The placing of weapons with the dead had the purpose of furnishing aid to those gone before in their warfare beyond the grave or in their attempts to get game. Unless some such belief existed it is hardly likely that a good weapon would be sacrificed to no purpose whatever. Can we believe anything less than that these Aurignacians made the costly sacrifice of surrendering desired ornaments or choice weapons because of their unhesitating belief that by so doing they helped their friends in the new experiences of another life? It is probable that the ornaments belonged to the deceased but they were coveted objects, none the less.

In the Lower Aurignacian at Grimaldi the two negroids had a pastel of blue stone, a little disk of serpentine, a blade of flint and two small scrapers buried with them. In the Middle Aurignacian burial at Cro-Magnon there were pendants of ivory, worked antlers of the reindeer and worked flints. In the Upper Aurignacian burial at Brno there were found large perforated stone disks, small disks engraved about their circumference, three plain disks made from the ribs of the rhinoceros and three others cut from the molars of the mammoth. A headless statuette in ivory was also recovered while below the skeleton lay a tusk and shoulder blade of the mammoth.

With the dead are found bones of animals and especially the joints indicating that at the time of burial the flesh was still upon them. They were placed there as a food offering to satisfy hunger on the long journey that must be taken. In this connection there are also indications of funeral feasts in which the living sit about the dead or near by and have a communion meal of commemoration and fellowship. Bardon and the Abbés Bouyssonie have called attention to the large number of animal bones in the neighborhood of the Mousterian burial at Chapelle-aux-Saints. The remains of twenty-two reindeers, a dozen remains of bovidae (bison or Bos primigenius) and several horses were found, suggesting that a great funeral feast had been held. If this custom existed in the Mousterian there would be little reason to doubt its practice in the Aurignacian. If we can believe in the worthiness of this interpretation of the funeral feast idea it would indicate that the Palaeolithic peoples felt that they did not lose contact with their deceased friends and relatives; that they still could have fellowship with them in the familiar ways practiced during life and they took pains to guarantee the continuance of the old relationships.

Very frequently red ochre is used in connection with the burials, the body lying in a mass of this substance and possibly painted with it. This practice indicates the idea of magic in connection with burial and introduces a new and entirely different religious motive. This will be treated under the head of magic.

The Aurignacians were accustomed to interring the dead in the caves, the abri, and in the shell heaps where they once had lived. There was, at least often, no such dread of the dead as has arisen in modern times, necessitating the abandonment of the place where death or burial has occurred. The dead were in proximity to the living. The Aurignacians were not inconvenienced by the vicinage of those who slept their last sleep so close at hand in the debris of the cave. Tomb and fireplace were close together and we may see again in this association not only the absence of fear but perhaps a recognition of the common ties binding the living and the dead, a recognition of family relationships that outlived death, the sensing of a protecting power from those who lay so close at hand and the feeling of comfort arising from the realization of their near presence.

There was probably a feeling that the dead could exercise especial powers for evil, certainly, but perhaps for good. This idea is undoubtedly indicated by the burial of talismans made of human bones found in the Grimaldi burial and is a replica of the idea still prevalent among Australian tribes that the bones of warriors and of great men have vast virtue and power if worn by the living or placed with the dead. So the Aurignacians may have felt that the close presence of their great ones was a protection although they were no longer numbered among the living.

This idea too is magical and, from what we know of the psychology of primitives, quite natural. Magic and magical practices were a large feature in the lives and in the religious beliefs, such as they were, of the Aurignacians. Although we may connect funeral rites and the cult of the dead with religion, yet these particular features have only human aspects. Ultimately religion must have a more profound meaning connecting it with powers higher than that of mere mortals, beings toward whom special relations must be held and who must be the object of rites and ceremonies. The Aurignacians apparently had strong belief in magic and we may regard these views as the beginning of a higher form of religious belief than that involved in funeral rites or in beliefs regarding the dead.

It is extremely difficult to discover the religious attitude of the Aurignacian and what is offered is given with much misgiving and with the frank recognition of the slender basis upon which many of the conclusions are placed.

Magic plays a very large part in the religion of modern primitives; indeed it seems to be the preliminary step to any religion and it seems entirely probable that the Aurignacians had taken this step but did not go beyond it.

The problem of magic must be approached from the standpoint of art and so far as the Aurignacians are concerned with the idea that their art and that of the Magdalenians had the same underlying purpose. It must be frankly said that Magdalenian art shows evidence of the existence of magic, whereas Aurignacian art has little, if any, such evidence. Its apparent absence in Aurignacian art does not necessarily mean that it is wanting but merely that means of representing it had not been devised. The Capsian art of Spain, made by a people with Aurignacian culture, indicates that the idea of magic had already arisen and it seems entirely probable that the same thought of magic had arisen in Aurignacian time, in what is known as its sympathetic form.

The underlying idea in symbolic magic is that if anyone desires to obtain control of anything or to secure domination over it, he must make a representation of that object in the form of an image, an engraving or a painting. When this is done one can oblige the desired object to do whatever he wishes. If a bison is wanted one can be obtained by making a representation of it on a cave wall and performing some magic rites before it.

These representations are not idols, nor are they objects of worship. Their mere production furnishes magical power and no further acts of worship are necessary in order to secure the desired object.

It seems entirely possible that Aurignacian man in his artistic representations had the underlying purpose of symbolic magic in his mind. It was not merely a case of artistic endeavor without any ulterior purpose but a real attempt to secure power over animals by representing them, or to secure certain ends such as their reproduction by this means.

The Aurignacian man had no easy time; his life was a hard one at best even though game was much more abundant in his day than it was later on in the Magdalenian when magical representation to secure it must have seemed tremendously essential. It took much of the Aurignacian's resources, his time and effort to supply the needed clothing, food and utensils. He had relatively little time for leisure or the arts of leisure. Hence his drawings, his other forms of art expression, may have been forced from him through the demands of necessity or what he believed to be such. These art expressions, as we have seen, are commonly placed in the farthermost recesses of caves where the darkness could only be relieved by feeble flickering lights. Under such conditions drawing or painting was difficult and it must have been something other than mere art that compelled these delineations. It may have been sheer necessity that called them forth. If these men were making pictures of animals to satisfy artistic instincts only, they would place them where they could be seen and, above all, where there would be less difficulty in executing them. Art for art's sake is to be seen, not hidden. This desire for obscurity does not fit in with our ideas of art. These pictures too, are not found in the portion of the cave or shelter occupied by man himself; they are a thing set apart from his every day life.

The custom of drawing or painting designs on top of earlier ones and thus obliterating them or rendering them less intelligible, without the least regard for prior artists, hardly leads one to believe that they cared much for art, at least for its own sake. It appears that we are forced to look for another explanation and this seems to lie most likely in the domain of magic.

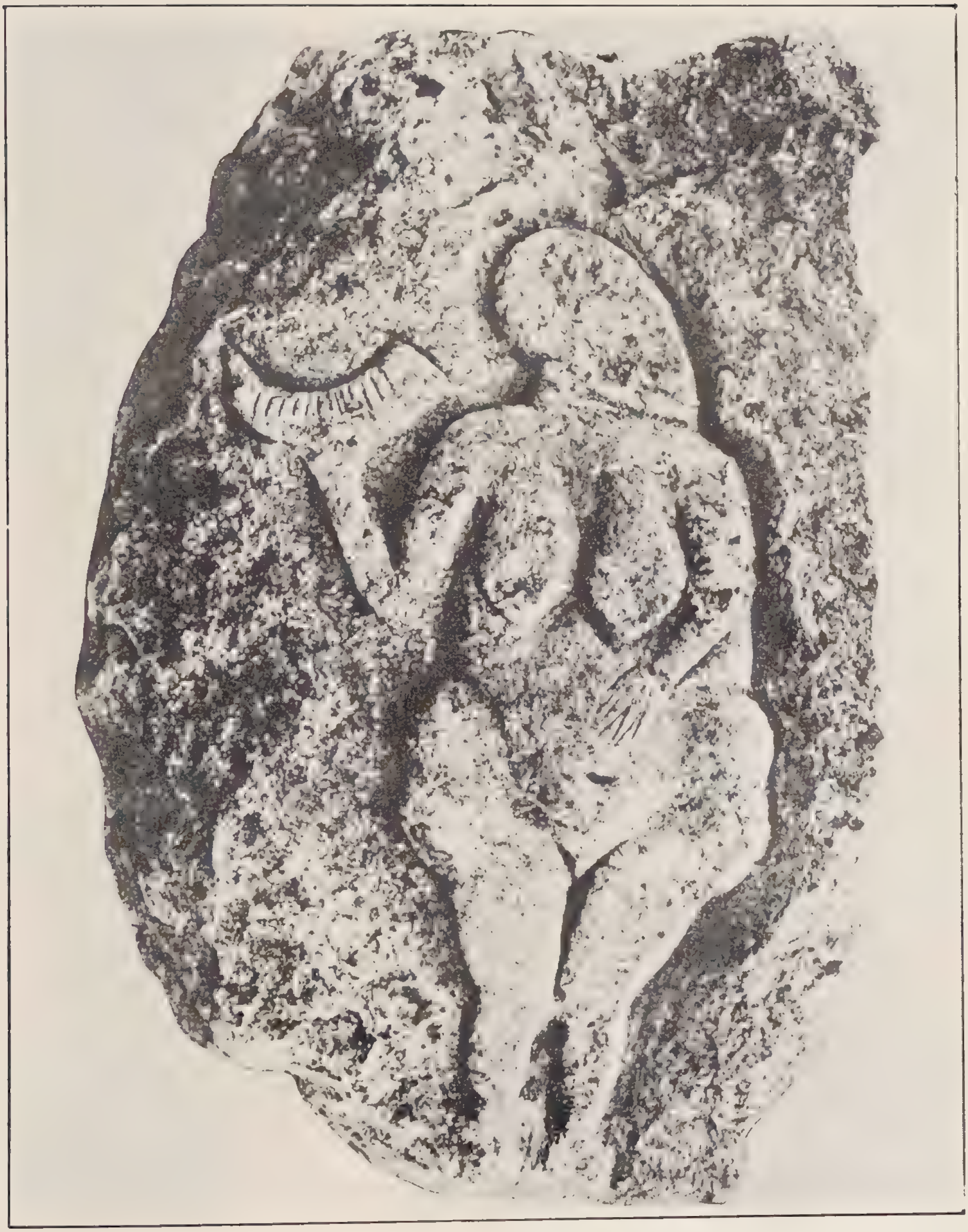
The Aurignacian obtained food, clothing, ornaments and in part his utensils from animals; they formed the very core of his existence. Of necessity he would use every art and every means within his power to keep the animal world under his control so that it might be at his command. It was absolutely necessary that it should maintain its numbers. This may have been a difficult matter in the face of growing desiccation. Animals were so necessary to his life and his well being that he left no stone unturned which he believed would aid in their increase. He needed to be ever alert as to their movements and yet he soon found that he had no power to regulate their migrations. By his own powers he could not insure their presence nor their increase. There thus awoke in his high grade mentality the realization of his own powerlessness and the necessity of appeal to powers greater than his own. In short, it stirred in him the need of a superhuman influence and the necessity of having relations and standing with these higher powers whatever they might be.

The modern Chuckchees and neighboring peoples, driven by the urge of hunger caused by the disappearance of the reindeer, will devour like famished wolves the chance carcass of one of these animals, dead by disease. They leave nothing behind, even the bones are reduced to powder. Although these people have domesticated the reindeer to some extent, they have no very adequate control over them and when they leave, the people suffer terribly from famine and under its stress they will perform innumerable incantations and magic rites in hopes to recover the lost herds.

Abundant as game must have been in the earlier Aurignacian age, yet it must not be forgotten that it was migratory and at times there must have been a shortage of animal food and the menace of famine appeared, since they were at the mercy of these roving herds. Under such circumstances one hardly looks for the expression of art, merely for its artistic value and pleasure. Nay, rather it was employed to aid man through its magic influence to secure the animals he so needed.

The desire to hide art can have but one explanation and that is that the art thus hidden away was connected with certain secret rites and ceremonies whose proper performance required obscurity and darkness. This possibility of the religo-magic purpose of art is well substantiated by practices among modern primitives. In the case of most rites performed among such people there is a public performance carried out where all may look on and a ritualistic part carried on in secret which may only be witnessed by the initiated. This ritual is performed in underground rooms, in caves, in specially erected structures, but in all cases, secret. In these hidden places are found the altars, the paraphernalia and the paintings which are utilized in the ceremonies. In the case of the North American Indians, drawings and paintings play an important part in the rites which often take on a religious significance, as among the Zunis. The Arunta of Australia make paintings on the ground in connection with ceremonies designed to secure the multiplication of animals and plants. Missionaries from South Africa report that the Bushmen give three reasons for painting animals.

1. For the sake of drawing something—the desire for self expression.



Female Figure Holding a Bison Horn. From the Rock Shelter of Laussel.
Dordogne, France.

2. To let other Bushmen know that they have seen the depicted animals in the region.

3. For purposes of magic and to be assured of an abundance of food.

As we have already noted, some able investigators believe the Bushmen are closely associated with the Aurignacians, coming into contact with them and possibly comingling with them, hence these reasons are suggestive and important.

If one examines closely the Aurignacian art of Central Europe he finds that it is very similar in character and modes of expression throughout its whole extent. It is as if the art were in the hands of a group who maintained its traditions and by constant interchange of ideas preserved its uniformity. This is precisely a condition such as one would look for in a class of shamans or priests interested in maintaining the status quo of its sacerdotalism.

Some would see in these pictures an entirely different purpose, that of totemism; the rise of the totemic idea of family relationships based on descent from certain animals. This idea while possible, seems less likely than the purpose above stated when all the facts are studied. Even if they are in part totemic they still have some religious significance for in carrying out totemic rites, as in the case of Australians, there is more or less worship connected with the services.

It would be folly to deny that the Aurignacians did not practice totemic rites about animal pictures. We do not know whether they did or not. If so the total ensemble of these drawings do not indicate it. One thing only seems certain, namely that whether the Aurignacian art existed for magical purposes or for totemic purposes, the ceremonies that went on about them were essentially religious.

The symbolic magic which is so evident in the ritual and practice of modern primitives and which has so large a place in their thought, indicates by that very fact that it has long held sway and is quite fundamental in savage philosophy. The idea of magic seems perfectly natural to him, so natural that he does not question the philosophy of it however far-fetched it may seem to the modern mind.

To the Aurignacian of old there would be nothing wonderful or mysterious about the idea of symbolic magic. It was a natural feature due to the fact that all things animate and inanimate were closely related. It may be doubted whether the Aurignacians made any distinction between the two. If he wanted roast horse for dinner he must visit the picture of a horse, go through the ceremony and pretense of killing it and then go out and secure the animal. If his hunt was not successful something was wrong with the preliminaries or with the hunter himself. Just how they carried out their preliminary incantations is not known, of course, but that it had the same general character and intent as in similar procedure with modern primitives seems probable.

In modern times when magic holds sway among a people its practice is in the hands of a group known as shamans or medicine men and this seems likely in the Aurignacian. Certain paintings of Magdalenian age indicates their existence then as a well established order and it is probable that they were in existence in the earlier Aurignacian age since their mode of life and their needs were so similar as apparently was their general mentality.

As in more modern times, these shamans probably formed secret organizations; it is inevitable that they should. In addition they probably ruled the people in reality, even though there may have been civil chieftains. Even here at the first dawn of civilization there was likely to be an organization of such men that was in its effects essentially theocratic even though the notions of gods had not arisen. This theocracy would be made up of men who had special power with spirits good or bad and who acted as intermediaries between the people and the dread invisible world about them.

It has ever been the business of shamans and their ilk to form what is in all essentials a strong priesthood in order to act unitedly to educate neophytes and above all to perpetuate their own power. While through the ages there doubtless have been many sincere souls among them who have sought the true welfare of the tribe, for the most part the history of such organizations shows that they seek chiefly their own selfish ends; they desire to obtain power and influence at the expense of their followers. Above all they plan to keep them in ignorance and superstition so that their own weaknesses and follies shall not become apparent to the people.

Superstition is the soil in which magic flourishes, given an educated tribe and magic must wilt speedily. To maintain magic and the cult of magic it is absolutely necessary to maintain ignorance and superstition and to feed them by means of pretended influence with higher powers. It is necessary to have spectacular performances in public, incantations, and sacrifices to maintain their hold and at the same time to satisfy the credulity of the onlookers by the splendor of the show. In a more ignorant age, however, the medicine men may well have believed that their incantations were necessary and did really secure favorable results.

The shamans have ever been an adroit and able group who have conserved ability wherever they have found it and have drawn it into the service of their own ranks. It is they who have educated the members of their group and kept living such knowledge as they possessed. In a true sense they have been the students and scientists of their day and they often took forward steps that led toward civilization.

The decorated caverns of the Aurignacians served as a field for their activity. It was the shamans who, in all probability, entered the caves and in their remoter recesses put the magic symbols and the unique figures on the walls which made the caverns no longer an ordinary place but a sanctuary so to speak where one met the great spirits and from their invisible presence gained strength and direction for the daily avocations.

In every religion, in every temple there must be a Holy of Holies, a place where divinity hides itself and where it can only be approached by those who are prepared by the priests or by those who have the insight to worship in spirit and in truth. Always divinity is more mysterious if it be surrounded by darkness or if it is inaccessible.

The writer has had this impression very forcibly brought to mind by a trip under the auspices of the Begouen brothers into the cave of Tuc d' Audoubert where the well known clay bison are located. After the long and arduous trip through the lengthly cavern; after the severe exertion required to penetrate these inner recesses; after one has become increasingly awed by the darkness and silence, by the mystery of the place, by the beauty of the stalactites reflecting in scintillations the feeble light of the candles; one comes at last in the very remotest corner upon these remarkable images. Standing spellbound and thrilled by the scene one must own to a feeling of awe and reverence as he approaches these magic figures of long ago in the quiet solemnity of their underground abode. To a superstitious people the bison must have had an overwhelming fascination and drawing power, creating in the beholder those deeper emotions and thoughts which today we term religious.

In addition to the magic side of his religious belief, the Aurignacian in common with hunting tribes of all ages, must have been nature worshippers, at least to some degree. This is a natural type of religion and readily forms the basis for higher religious belief.

People of good mentality, such as the Aurignacians, who live in the open, *en rapport* with nature in all her moods, have a subconscious attitude toward natural forces and objects that amounts to a reverential and worshipful feeling, albeit one of superstition and dread which cannot be dissembled altogether. It must find an outlet by some act, some penance, some sort of sacrifice or a reaction of one kind or another. We who live today have far more scientific knowledge than did the Aurignacian and this, for many, has helped to dispel the old superstitions and the old dreads. Yet for the great mass of men now as for the ancient Palaeolithic people, fear, unreasoning fear takes possession of the mind in the presence of natural forces—the tempest, the earthquake, the flood and the pestilence. Human nature changes little through the ages and across the thousands of years have been carried the old views, the ancient beliefs and fears almost unchanged by time. Modern men may not worship nature because of these fears as a more superstitious people would, but they still have the old dread and terror in their souls.

We may also imagine that the sun, moon or other heavenly bodies had their share in his observation and regard. Living as he did in a climate prevailingly cold and dry, he would welcome the return of the sun in the spring and perform incantations to insure its safe journey back.

There seems to be little double that there were rites for securing the reproduction of mankind and of animals and that these had a prominent part in their thought and their ceremonies. The nude figures of women with the reproductive organs showing, or the carvings on rocks showing these organs by themselves can hardly have any other meaning, although this idea is scouted by Luquet and others.

The attitudes and relationships of male and female in certain drawings can only be interpreted as signifying the reproductive act. It is doubtless true that the bulk of the representations of animals are intended to secure success in the hunt through magic, but the other idea of securing renewed numbers and increase of the herds is also present in a definiteness that is undeniable. In this general connection perhaps no figure is more significant or suggestive than the Venus of Laussel found by Dr. Lalanne in an Aurignacian deposit near Les Eyzies. The cut will indicate the nature of this remarkable and much discussed figure. It has the characteristic obesity of the Aurignacian figures. In the right hand is held a bison's horn with the open end toward the head which indicates that it is not intended to be a musical instrument as has been thought, but possibly a horn of plenty, an insignia of abundance or of fertility. The emphasis placed on those portions of the body that have to do with maternity bears out the same idea. The writer cannot agree with Luquet that this figure is a mere erotic creation. It is too carefully finished, too much effort has been placed upon it to consider such an assumption. A picture does not show the grace nor the striking qualities of the original Venus as the author can testify after inspecting it at the Lalanne home, near Bordeaux. The original is artistic and appealing from the artistic standpoint, a veritable work of art which not only reflects great credit upon its Aurignacian creator but indicates that it was meant for some important service, a more important purpose certainly than to arouse the passion of lust. All through human history man has lavished upon his representation of gods and goddesses all the wealth of his imagination. He has made them to represent his ideal of beauty and of those other attributes which he has considered most essential and necessary in his life. Thus, the Aurignacian in his ideal of woman figures those things which he admired and which he felt were essential. Motherhood in the case of mankind and in the animal world was one of his ardent desires and quite naturally he represents these longings in his sculptured figures.

From a critical standpoint it is said these figures are often unseemly and indecent, but it is well to remember that early man had not developed the comparatively modern sense of shame or of modesty. In the Bible account of Adam and Eve it is stated that although without clothing, yet in their state of innocence they were not ashamed. This naïve account doubtless truly represents a condition that obtained widely among primitive peoples. The author has noted in his travels in Kenya Colony in 1910 such tribes as the Kavirondo where the women wear no clothing. They go about their daily tasks with no more thought about their nudity than the animals. There is a naïveté in primitive life which is hard for modern civilized peoples to grasp or comprehend. The Kavirondo women are honorable and trustworthy and no one has the right to judge otherwise simply because they are nude. The Aurignacian sculptor proceeded to represent the organs of alimentation and of reproduction upon his statuettes, not necessarily because he was bestial, but because these organs represent to him continued life if he could only secure their co-operation.

In making these figures as he did he was in all likelihood earnestly seeking the welfare of his people, believing according to his ideas of symbolic magic that in so doing he was providing for his group increase in numbers and greater permanency.

There seems to be little doubt that phallic worship of a sort played a part in the religion of the Aurignacian, as it has in many another. The worship of the organs of reproduction although it may descend to the most sensual and beastly practices, yet in principle may have the highest ends in view, namely the assured ongoing of the race through the magical efforts of these physical objects. As has been pointed out, it is common in Aurignacian deposits to find carvings of the reproductive organs by themselves and unattached. It is clear that they had some significance to the people or they would not have been made. They may have been worshipped but more likely they were symbols meant to awaken the idea of fecundity in the minds of the powers which created men and animals; powers which might often seem to be recreant to the duty and privilege of creation. If the numbers of the tribe were diminishing then these higher powers must be aroused to their duty by means of appropriate suggestion in the form of these phallic symbols.

In many cases primitives fear or venerate the animals themselves and they carry on various rites and dances similar to those depicted on the walls of Palaeolithic caves in order to pay them proper respect. There is a religious motive in all of this effort even if it seems to be a compound of fear and self-interest.

In this account of Aurignacian religious ideas, it is clear that we are dealing with beliefs that are not on a level with those of our own day in which there is supplication not for the exercise of one's own will but that of the divine will. The worshipper takes the attitude of humility, adoration and praise. This is very different from the position of the believer in magic as Aurignacian man apparently was. He tries to force the higher will to carry on his own particular desires. All of his rites were utilitarian in their purpose and strictly speaking they were not true worship in the modern sense.

This is a religion; although it is a religion of self seeking, a religion which must produce results according to the needs of the worshipper or be cast aside for something better; for something that would work. Such a religion permeated by magic is only the penumbra of religion, a portal to true religion, a sort of belief that prepares the way for a higher worship. In all of the milleniums since the Aurignacian it has been impossible wholly to disassociate magic from religion; they are still companions more or less inextricably interwoven. It will only be as man divests himself of the old superstitions that religion will stand forth unalloyed and resplendent.

We still sing in our litanies and repeat in our creeds the Aurignacian hope "I believe in the resurrection of the body." It is true we do not place the dead in red ochre nor do we strew shells over the body to insure that rising again, but none the less, the old Palaeolithic belief clings to our professions of faith. We are not yet wholly separated from the ideas of magic and its wonder working possibilities in connection with the rising again of a physical body.

True religion, as we understand it today, was impossible to Aurignacian man with his background, his views of life and his training. Its coming needed to wait, not for men of better intellectual powers, but for men with better understanding of the world, its origin, its laws and its processes; men who, through the discipline of long thought and experiment, have been able to free themselves from superstitions and vague dreads. As a result they see nature and the world about them in a truer way and have a better perspective.

Religion, as we commonly understand it, could only be achieved by modern man in historic times, for it had to be gained by long effort. It could only result from a slow process of evolution, a evolution which had its simple beginnings in the Palaeolithic age, but has reached its fuller fruition in more modern days.

All honor to the savage hunters of the earlier days who made the first vague attempts to seek something beyond themselves. They opened the way for us to find a better faith and a truer understanding of the spiritual life, and without them we might still be groping in the darkness. They at least turned the thoughts of men to the fact that there is something more than mere physical existence, to the thought that man does not live by bread alone, that one can reach out in hope and aspiration to something beyond himself, beyond these shores of time. They taught us to believe that there is another world whose mysteries we may seek to understand, whose life we may share if we strive to know. They sought but could not find it; we, perhaps with a firmer step and a surer confidence, also seek in the hope that we shall know the truth at last.

In a true sense these Palaeolithic peoples were heralds who in the semi-darkness announced to the world, "the light is breaking, the long night passeth, behold the promised day is at hand."

CHAPTER TWELVE.

RETROSPECT

In this bulletin a brief, inadequate study of Aurignacian man and his culture has been presented. The ground has not been covered as fully as might be because of the natural limitations of a work such as this is intended to be, i. e. one primarily for lay readers and college students.

In the course of this work we have seen that the Aurignacian peoples appear at the close of the Ice Age; they are of diversified racial characters but men of large mentality and real ability. They appear for a period and then pass on as do the sons of men in all generations to a greater or lesser oblivion. Very likely their blood still flows in some groups in Southwestern Europe and in Africa, but their original traits, like their culture, have disappeared. After all it is of very little moment whether these Aurignacian men and women live in us or not. The essential thing is that we are descendants, if not of the Aurignacians themselves, then of some *Homo sapiens* who lived in their day and who was their contemporary. Our own ancestors may not have been the *Homo sapiens* with the Aurignacian culture; if not, then they were the same species of man but with a different culture; one that is as yet unknown.

The important matter is that the species, *Homo sapiens,* should be emphasized and not the particular branch of the species.

Presumably there were already several varieties of the species in Aurignacian times; we have every reason to think so. No one knows which one of these races originated the Aurignacian culture, nor which was the more progressive and purposeful. All that we know now is that when the Würm glacier was in full retreat and the Ice Age was losing its long hold upon the earth, men of our species were settled all about the Mediterranean basin and were pushing on northward into the basin of the Atlantic.

In the Mediterranean basin the Aurignacians seem to span the whole interval between the disappearance of Neandertal man and the appearance of the Neolithic races. In the Atlantic basin the conditions were very different and two cultures, the Solutrean and Magdalenian, intervene between the Aurignacian and the transition to the Neolthic.

The relation of these two cultures to the Aurignacian is uncertain; the Solutrean seems to be a rather rude displacing of the Aurignacian by a vigorous, unique but not long lived culture. The Magdalenian seems to have much closer affinities to the Aurignacian than does the Solutrean and it may be, as some contend, a continuation of the Aurignacian culture bearing it on, especially in its artistic features, to a fuller and finer fruitage. Such a relationship has not been proven and it may not exist. If it is true then it was carried on by a different race, perhaps one allied to the Laugerie-Chancelade man with his Eskimo affinities.

In the writer's opinion, the Aurignacian (Capsian) culture of North Africa moves right on and passes into the Neolithic without a break. This view cannot be substantiated without much more field work. At present, however, various indications point that way.

As the Neolithic period approached there were renewed movements of populations; migrations were in sway. Each migrating group brought its own culture to modify more or less those which had preceded. The Aurignacian groups who held the field in North Africa would usually be influenced by the cultures which were sweeping past and with which they were in temporary contact. In the spread of cultures with their seed sowing, one is reminded of the parable of the sower. Some seed falls on good ground and yields an abundant harvest while some falls on stony ground where it fails to take root and withers because there is no receptive soil.

Thus it is with cultures and their ongoing and the people who carry the culture. There is the receptive type of mind which readily receives new ideas, accepts them and works them over into its individual style and there grows up the harvest of a new and perhaps rich culture.

There is in every age, however, the stony mind which refuses to receive new ideas which says, "the old is good enough for me; the ways, the beliefs, the opinions of my fathers are all sufficient; they cannot be improved upon." It is this type of mind whether it be individual or racial, with its thin soil, its flinty composition which has ever favored stagnation, which indeed wants it and which has permitted no real advance within the circle of its influence.

In this type of mind no new culture ever secures efficient rootage. Fortunately for us, the Aurignacians for the most part were the type that responded to the appeal of new cultures and when incoming peoples arrived who in other lands invented or developed pottery or weaving, who had domesticated grains or animals, who had devised new methods of treating stone, the Aurignacian man with his receptive mind was ready to accept the new found inventions and to make them his own. He was still the old Aurignacian in his lineage but he was becoming Neolithic in his culture.

What has been stated here seems to be true in a large way of the North African Aurignacians. Here again the name counts little. What is significant is that here is a *Homo sapiens* with a forward looking mind and a readiness to forge ahead; it is that which has counted in the history of mankind.

There has been too much of a tendency among archaeologists to postulate the necessity of believing that people in any given region cannot advance through the absorption of other cultures, that any culture if it changes must do so by a slow evolution in each regional area, irrespective of surrounding influences. To some this idea is a gospel which cannot be gainsaid, but one does not need to be bound by so narrow a doctrine. The Aurignacian culture had its evolution without doubt, and the evolution of some of the tools can be followed, but it also advanced by taking in new ideas and thus modified passed on into later cultures which have eventuated finally into our present civilization. In other words, we owe our civilization not alone to the slow growths and evolution of local cultures but to liberal-minded men of the past who have been quick to seize upon new ideas and to make them a part of the fabric of their culture and, so building, have pushed civilization forward more rapidly and effectively than by the slower growths of evolution by themselves. In very fact it is the clear-seeing mind in all of the ages past who has made possible the civilization we enjoy.

In closing, may the author simply add that he has tried, while keeping to the facts as we know them, to popularize the work and to humanize it in order that these old Aurignacians should appear the living men and women they really were. Such a method is open to error and especially to criticism by those who believe that a work such as this should present facts without individual interpretations.

In view of the class of readers he must address, the writer sees no other course but to open the way to possible misunderstanding and also to criticism. It is far better to present these Aurignacians of the long ago as alive, even if a modicum of misinterpretation does creep in, than to reveal them as dim presentiments, mere shadow who lived ages back, a people who made a few utensils of bone and stone, who left some heaps of food refuse from their meals and then pass on into the unknown.

They deserve to live in our esteem for what they did for us. Enthusiastic utterances may be pardoned if these hardy hunters of the milleniums ago can be made to take their rightful place in our thought, in our gratitude and in our memory.

* * *

Every community, even the smallest in France has a memorial to its sons who sacrificed their lives in the World War. Generally the inscription on the monument reads that they gave their lives for the glory and honor of France.

On the war memorial at Les Eyzies, that old capital of the Paleolithic world, there is written a different and nobler sentiment. It says, "A tous ceux qui sont mort pour la civilization."(1)

An innumerable company of men and women through the years have given their lives, not solely for their clan or their tribe, not alone for their native land, but for that mightier and nobler thing we call civilization. In the vanguard of that great throng, march the Aurignacian hunters of the by-gone ages. Men of intellect, originators of art, founders of a striking industry, seekers after an immortal destiny: —they too, died for civilization.

(1) To all those who have died for civilization.

THE END

GEOGRAPHIC INDEX

Page
Ali Bacha 72
Allier 58
Altamira 101
Arcy-sur-Cure (Yonne) 58
Assouan 86
Audi 56, 57
Aurignac (Haute-Garonne) 3, 56, 58
Baoussé-Roussé 27, 102
Barma Grande (Liguria) 108
Beir Khaufoud (Tunisia) 80
Blanchard 111, 112, 113
Boviton 56, 57
Brassempouy 50, 58, 102, 108
Brno 27, 60, 118
Brünn (Moravia) 27
Caberets (Lot) 105
Canary Islands 34
Cap-Blanc (Dordogne) 101
Castillo (Santander) 101
Cellier Abri 39, 62, 63
Chapelle-aux-Saints, La (Corréze) 118
Charente 26
Châtelperron 56, 58
Cheric 79, 80
Cogul 114
Combarelles 97, 101, 108
Combe-Capelle 27, 116
Constantine 71, 86
Corneille 73
Coste La 56
Cottés, Les (Vienne) 27, 56
Cro-Magnon 27, 31
Cyrenia 85
David, Cave of 105
Dordogne 92, 96, 97, 101, 108, 111
Eyzies, Les (Dordogne) 70, 92, 126, 134
Eyzies de Tayac, Les (Dordogne) 101
Fedj-en-Nahla 82
Ferrassie, La (Dordogne) 49, 53, 56, 58, 71, 105, 106
Font-de-Gaume (Les Eyzies) 19, 97, 101, 108
Font-Robert (Corréze) 56
Gafsa 81
Gargas (Hautes-Pyrénées) 56, 58
Gayet 58
Germolles 56, 58
Gobi, Desert of 15
Gorge d'Enfer 56
Gravette, La 56
Grottes des Enfants 94
Grottes des Hyenes 73

Page
Haute Garonne 58
Hautes Pyrénées 58
Haurets 56
Henchir 82
Hornos de la Pena (Santander) 101
Kalahari 93
Kenya Colony 127
Kostienki (Russia) 108
Labatut (Dordogne) 92, 93
Laussel (Dordogne) 56, 108, 126
Lautsch (Moravia) 27
Lespugue (Haute-Garonne) 102
Masnaigre (Dordogne) 56
Mechta el Abri (Algeria) IV, 28, 71, 76, 78, 79
Mentone 94
Mesopotamia 85
Modena (Italy) 108
Moravia 59
Morocco 96
Moustier, Le (Dordogne) 55, 56, 57, 62
Mouthe, La (Dordogne) 101
Negrine el Quedim 81
Niaux (Ariège) 101
Nile 86
Noailles 50, 56
Oued Ouskount 76
Ouled sidi Abid 80
Pair-non-Pair (Gironde) 56, 58
Pasiega, La (Santander) 101
Paviland (Glamorganshire) 27
Pekarna (Moravia) 60
Předmost (Moravia) 19, 27, 32, 116, 117
Pyrennes 96
Quina, La (Charente) 88
Rhodesia 80, 96
Rocher de la Peine 92
Roches, Les (Dordogne) 56
Roche-au-Loups, La (Yonne) 56
Ruth, Le (Dordogne) IV, 39, 56, 58, 62, 65, 66, 67
Sahara 96
Sardinia 34
Sergeac 111
Siberia 91, 96
Saone-et-Loire 58
Solutré (Saone-et-Loire) 11, 27, 32, 45, 50, 58, 87, 116
Somaliland 31
Somme 11, 97
Sovatir 82
Spy (Namur) 56, 58
St. Leon (Dordogne) 92
Syria 85

Page
Tarte 56, 58
Tayac 101
Tebessa 78
Tilly 58
Transvaal 96
Trois-Frères (Ariège) 101
Trou Magrite 58
Page
Tuc d'Audoubert (Ariège) 10, 125
Vézère 25
Vieja 89
Willendorf (Lower Austria) 102, 108
Wisternitz 59, 61
Zarif el Ouaar 80

SUBJECT INDEX

Anvils 42
Arrows, 94; pedunculate 77
Arrow shaft polishers 51
Art, 104; *mobilier,* 104; "macaroni" 104
Arunta 122
Audi blades 46, 77, 82
Awls, 42, 67; bone 51
Azilian Epoch 72
Azilian-Tardenoisian 72
Baboons 94
Bas relief 55
Baton du commandment 51
Beads 102, 111
Bears 18, 20, 58
Beaver 20
Bible 127
Birds 21, 99
Bison 15, 20, 22, 52, 93, 105, 118, 127
Blades, 39, 45, 49, 70, 77, 93; Châtelperron, 47, 56, 57, 77; Gravette, 47, 54, 56, 57, 77; retouched, 77; strangulated, 45, 57, 80; serrate 60
Boar 20
Bodkins 51, 52
Bone, 53, 98, 110, 112; utensils, 50-52
Boring tools 49
Boskop man 30
Bovidae 20, 105, 118
Bows 94
Bracelets 98, 102
Broken Hill skull 29
Bühl Stage 9, 15
Bulbs of percussion 41
Burial, 99, 115, 116; collective, 117, 119; tied 116, 117
Burin, 43, 44, 59, 67, 79, 80, 84; angle, 67; *à carène,* 44; *au bout de lame,* 43; *busqué,* 44, 57, 67; *de fortune,* 43, 49; double, 43; *de coup single,* 43; flute beak, 44; parrot beak, 43, 54; prismatic, 44; triple, 43; pygmy, 44; -scraper 49
Bushman 5, 24, 34, 90 91, 92, 93, 94, 95, 96, 108, 122, 123
Camp sites 81
Capsian culture 2, 72, 73, 78, 82, 93, 109, 132
Cardium 83
Cattle 18, 22
Caves 97
Celts 61
Chalcedony 37
Chaldeans 113
Chamois 18, 20
Chancelade man 34, 132
Châtelperron blade 47, 56, 57, 77
Chellean Epoch 2, 26, 41, 73, 84
Chert 37
Chipping 36
Chisels 52, 103
Chuckchees 122
Color 61, 66, 84, 95, 103, 104, 107, 113
Combe-Capelle man 30, 31
Conchoidal fracture 36
Cores 42
Coup de poing 24, 53, 84
Crane bill point 26
Cro Magnon 4 26, 27, 28, 29, 31, 32, 33, 34, 35, 54
Cupules 107
Dagger 51
Dance 114
Daun stage 9
Decoration 102
Deer, 20, 22, 111; red 20
Dog 89
Domestication of animals 87, 88, 89
Eburneen 57
Éclat, see Flakes
Egyptians 113
Elephants 16, 17, 18, 20
Encampment sites 73
Engraving 94, 96, 97
Eoliths 40
Escargotière 73, 74, 75, 76, 79, 82, 86
Eskima 26, 60, 132
Eurafrican 31, 34
Female 102
Fire 67, 68, 76, 98
Fireplace 61, 67, 93, 98, 119
Fish 87, 91, 111
Fishhooks 46, 51

Page
Flakes, 39, 40; éclat, 42-50, 69, 70, 93; notched 45
Flint 36, 37, 38, 39, 40
Fluorite 112
Food 87
Folklore 95
Forestian 14
Fox 18, 61, 91, 110
Frogs 94
Gazelle 20
Geometric flints 45
Getulian 72, 73, 78, 79
Giraffe 20
Gnu 20
Gopher 20
Gorge hooks 52
Gravers, see Burins
Grimaldi 1, 27, 30, 31, 33, 34, 73, 108, 111, 116, 119
Gschnitz 9
Guanchos 34
Günz 7
Hammer 39, 44, 70, 78, 103
Hand 107
Hardpan 75
Heath cocks 20
Hippopotamus 16, 20
Hooded figure 108
Horn 50
Horse 14, 15, 18, 20, 22, 45, 58, 87, 88, 97, 105, 106, 108, 112
Hottentot 5, 34
Hunting 90, 99
Huts 94, 97
Hyena 18, 20, 58
Ibero-Maurusian 72
Ibex 18, 20, 69
Indian, 91, 98, 122; Zuni 122
Ivory 50, 53, 59, 60, 61, 98, 110, 112, 118
Jadeite 112
Jasper 37, 112
Kabyles 34
Kavirondo 19, 45, 61, 127
Kitchen middens 75, 87
Knives 49, 93
Lames, see Blades
Lamps 103
Lances 53
Laufen Retreat 9
Laugerie, man, 34; Laugerie-Chancelade man 132
Laurel Leaf points 26
Lemming 18, 20
Leopards 21
Lions 18, 19, 20, 21, 61
Locust 94

Page
Loess man 33, 55
London skull 30
Logan Museum 62, 70, 71, 72, 76, 92, 111
Macaroni, see Art
Magdalenian Epoch 15, 19, 27, 34, 39, 48, 50, 72, 73, 104, 105, 106, 124, 132
Magic 102
Mammoth 18, 19, 58, 60, 61, 97, 108, 118
Marmot 18, 20
Mechta man 28, 29, 30, 33
Microliths, 45, 46, 60, 74, 78, 80, 81, 82, 86, 92; crescentic, 45; triangules, 45, 82; trapezoids, 45, 81, 82; rectangles, 45; semilunar 82
Middens, see Kitchen middens
Mindel Epoch 7
Mortars 61, 103
Mousterian 19, 25, 26, 29, 44, 46, 48, 50, 53, 54, 68, 73, 77, 80, 84, 86, 88
Musical nstruments 114, 117
Musk ox 15, 18, 20
Neandertal 3, 5, 28, 30, 131
Necklaces 98
Needles 51, 112
Neolithic 26, 73, 74, 76, 78, 81, 82, 84, 131, 132, 133
Nodlues 39
Ochre 24, 78, 82, 83, 95, 103, 107, 113, 119, 129
Ornaments 61, 78, 82, 98, 102, 111, 121
Ornamentation 110
Ostrich 17, 21, 78, 79, 80, 82
Ostiaks 91, 92, 93, 96
Owls 20
Ox 20
Paintings 94, 95, 96, 104, 107, 124
Partridges 20
Patina 38
Pendants 61, 67, 78, 98, 102, 118
Pestles, 103; bone 61
Phallic worship 67, 128
Pins 102
Poniards 51
Points, 46; biconical, 71; spear point, 51, 53, 67; laurel leaf, 26; lozenge, 71; crane bill, 26; cleft base, 67; solid base, 67,-bone, 51; willow leaf, 26; Font-Robert, 47, 55, 56, 57; bone 51-78
Polishers 52, 67
Proto-Ethiopian 31
Ptarmigans 20

Page
Pygmy flints 45
Pygmies 5
Quartz 112
Rabbit 18, 20
Red Lady of Paviland 27
Reindeer 15, 18, 20, 22, 58, 60, 93, 97, 118, 121
Reptiles 21
Retouch 36
Rhinoceros 16, 18, 20, 61, 118
Rhodesian man 5, 30
Riss Epoch 7
Rock Shelter 73, 82, 91
Saw 53
Sceptres 51
Scrapers, 47-77, 80, 82; end, 67, 70; side, 67; keeled, 41, 47, 48, 54, 57, 58, 67; muzzle, 67; plane, 48; pyamidal, 48; round, 48; oval, 48; flat, 48; Tarte 65, 66, 67, 68
Sculpturing 55, 94, 103, 105, 106
Sex worship 106
Shamans 124, 125
Shell, 98, 102, 110; dentalium, 111; Nassa, 83, 111; tusk 111
Shell heap, 74, 77, 79, 86; see Escargotiere.
Silhouettes 105
Singing 114
Sites, encampment, 73; camp, 81; worshop 81
Skins 68

Page
Snail 17, 51, 74, 75, 78, 82
Snakes 94
Solutrean Epoch 26, 27, 34, 41, 47, 50, 54, 56, 57, 58, 61, 72, 73, 114, 116, 132
Sphagnum moss 22
Spatula 50, 51, 67, 113
Spear points 51, 58, 67
Spokeshaves 45, 49
Stag 18, 20, 111
Statuettes 60, 102, 108, 118
Steatopygy 93, 108
Striking platform 39
Stone tools 42-50
Talc 112
Tap-borer 49
Tardenoisian 46, 72, 79, 86
Tarte scraper 65, 66, 67, 68
Tasmanians 114
Tattooing 113, 114
Tectiform drawing 97
Teeth 50, 102, 110
Totem 102, 123
Traps 90
Truncated tools 49
Venus figures 55, 59, 108, 126, 127
War 99, 103
Whistles 52, 114
Willow leaf points 26
Wolves 18, 61
Wolverine 18
Workshop sites 81
Würm Epoch 7, 14, 16, 19, 131
Zebra 20

INDEX OF AUTHORITIES QUOTED

Absolon 12, 59
Albertini IV
Arcelin 27, 32
Bardon 47, 50, 118
Barthelon 28
Battaglia 1, 29
Begouen Borthers 125
Bosch-Gimpera 31
Boudy 81
Boule 31, 71, 113
Bourlon 55, 56
Bouyssonie, J. & A. 47, 50, 118
Breuil, Abbé 29, 50, 51, 57, 58, 60, 89, 93, 105, 109, 110, 114
Buckland 27
Burkitt 39, 42
Captian 49, 71, 81, 105
Cartailhac 115
Chantro 28
de Clauzion 112
Debruge IV, 28, 78, 86
Déchelette 20
Depéret 27, 32
Dietrich 116
Didon 111
Fleure 34
Geikie 14
Giuffrida-Ruggeri 34
Gobert 83
Gsell 16, 20, 21
Hadon 34
Hauser 27
Klaatsch 30, 31, 116
Lagotala 28
Lalanne 126, 127
Lartet 20, 27
Luquet 27, 108, 109, 110, 127
MacCurdy 7, 14, 60, 72, 109, 111
Mainage 115
Martin 26, 88
Manouvrier 29
Maschka 32
Mayet 27, 32
Mendes—Correa 31
Mercier IV, 28, 76
Morgan 81
de Mortillet 57, 115
Nesbitt IV
Obermaier 29, 93, 109
Pallary 26, 82
de Paniagua 26, 88
Penck 7
Pericot 31
Peyrony IV, 25, 46, 49, 53, 71, 86, 105, 107
Picard 115
Piette 57, 88, 108
Pittard 33, 34
Pond IV
Reygasse 26, 79, 80, 81, 86
de Rochebrune 27
Schmidt 22, 90, 115
Sergi 34
Smith 5, 30
Sollas 93, 94, 96, 97
Tylor 91
Vignaud 84, 85, 86
Violette IV

771-

Date Due

APR 26 1989

DEC 07 1993

NOV 30 1993

NOV 12 1995

NOV 18 1995

GN 2 .B25 no. 1
Collie, George Lucius, 18
The Aurignacians and their cul
010101 000
0 1163 0225434 1
TRENT UNIVERSITY

GN2 .B25 no. 1
Collie, George Lucius, 1857-
The Aurignacians and their
culture /

DATE ISSUED TO 364045

364045